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## **Cisco UCS C200 Server Installation and Service Guide**

**Covers UCS C200 Server Generations M1 and M2**

January 26, 2011

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## Preface

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This preface describes the audience, organization, and conventions of the *Cisco UCS C200 Server Installation and Service Guide*. It also provides information on how to obtain related documentation.

This guide covers UCS C200 Server Generations M1 and M2. Differences between the generations are noted in text.

## Related Documentation

The documentation set for the Cisco Unified Computing System (UCS) C-Series rack-mount servers is described in the roadmap document at the following link:

[Cisco UCS C-Series Documentation Roadmap](#)

## Audience

To use this installation guide, you must be familiar with electronic circuitry and wiring practices and preferably be a technician who is experienced with electronic and electromechanical equipment.

## Organization

This guide is organized as follows:

Chapter	Title	Description
Chapter 1	<a href="#">Overview</a>	Provides a brief overview of the Cisco Unified Computing System (UCS) and the role that the Cisco UCS C200 server plays in the Cisco Unified Computing System environment.
Chapter 2	<a href="#">Installing the Server</a>	Describes how to install the server into a rack, how to cable and power on the server, and how to connect to the service processor and your network.
Chapter 3	<a href="#">Maintaining the Server</a>	Identifies the replaceable components of the server and describes how to install or replace them.
Appendix A	<a href="#">Technical Specifications</a>	Lists physical, environmental, and power specifications.
Appendix B	<a href="#">Cable and Power Cord Specifications</a>	Lists specifications for the supported international power cords.

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Chapter	Title	Description
Appendix C	<a href="#">RAID Controller Considerations</a>	Provides information about the RAID controller options for this server and links to LSI documentation for the controllers.
Appendix D	<a href="#">Installation for Cisco UCS Integration</a>	Provides installation and upgrade procedures for installing the server into Unified Computing System (UCS) integration.

## Conventions

This document uses the following conventions for notes, cautions, and safety warnings.

Notes and Cautions contain important information that you should know.



**Note**

Means *reader take note*. Notes contain helpful suggestions or references to material that are not covered in the publication.



**Caution**

Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, can cause physical injuries. A warning symbol precedes each warning statement.



**Warning**

### IMPORTANT SAFETY INSTRUCTIONS

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.** Statement 1071

### SAVE THESE INSTRUCTIONS

**Waarschuwing**

### BELANGRIJKE VEILIGHEIDSINSTRUCTIES

**Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.**

### BEWAAR DEZE INSTRUCTIES

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**Varoitus TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käänökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausunumeroiden avulla.

**SÄILYTÄ NÄMÄ OHJEET**

**Attention IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

**CONSERVEZ CES INFORMATIONS**

**Warnung WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

**BEWAHREN SIE DIESE HINWEISE GUT AUF.**

**Avvertenza IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

**CONSERVARE QUESTE ISTRUZIONI**

**Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

**TA VARE PÅ DISSE INSTRUKSJONENE**

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**Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

**GUARDE ESTAS INSTRUÇÕES**

**¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

**GUARDE ESTAS INSTRUCCIONES**

**Varning! VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

**SPARA DESSA ANVISNINGAR**

**Opozorilo FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplő figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján kereshető meg.

**ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!**

**Предупреждение ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

**СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ**

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**警告 重要的安全性说明**

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

**沟标准工作程序。请 安全上の重要な注意事項**

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

**주의 중요 안전 지침**

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이 지시 사항을 보관하십시오.

**Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

**Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.**

**GUARDE ESTAS INSTRUÇÕES**

**Advarsel VIGTIGE SIKKERHEDSANVISNINGER**

**Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemesbeskadigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.**

**GEM DISSE ANVISNINGER**

**تحذير**

**إرشادات الأمان المهمة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لاصابات. قبل بدء العمل، احذر مخاطر التعرض للخدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في آخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز. قم بحفظ هذه الإرشادات

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**Upozorenje VAŽNE SIGURNOSNE NAPOMENE**

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

**SAČUVAJTE OVE UPUTE**

**Upozornění DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY**

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

**USCHOVEJTE TYTO POKYNY**

**Προειδοποίηση ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ**

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφραστή της στις μεταφρασμένες προειδοποίησεις ασφαλείας που συνοδεύουν τη συσκευή.

**ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ**

**אזהרה**

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העולול לגרום לפציעה. לפני שתעבד עם ציוד כלשהו, עלייך להיות מודע לסכנות הכרוכות במערכות شمالים ולהכיר את הנהלים המקובלים לминעת תאונות. השתמש במספר ההוראה המופיע בסופה של כל אזהרה כדי לאזורה את התרגום באזהרות הבטיחות המתורגם שמצורפות להתקן.

**שמור הוראות אלה**

**Опомена ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА**

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

**ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА**

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**Ostrzeżenie WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA**

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

**NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ**

**Upozornenie DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY**

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

**USCHOVAJTE SI TENTO NÁVOD**

**警告**

**重要安全性指示**

此警告符號代表危險，表示可能造成人身傷害。使用任何設備前，請留心電路相關危險，並熟悉避免意外的標準作法。您可以使用每項警告後的聲明編號，查詢本裝置隨附之安全性警告譯文中的翻譯。請妥善保留此指示

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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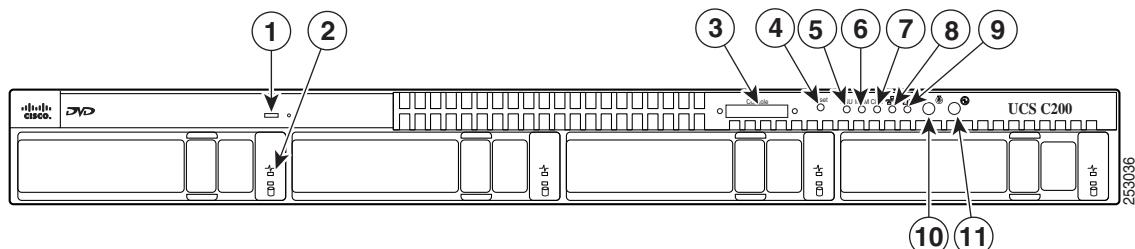
## Overview

The Cisco UCS C200 Server, which is a part of the Cisco UCS C-Series Rack-Mount server family, is designed to operate in a wide range of data center environments, including those environments that use the Cisco Unified Computing System, Cisco Nexus family products, and discrete Ethernet and Fibre Channel switches from Cisco and third parties.

The Cisco UCS C200 server is a high-density, two-socket, 1RU rack-mount server designed to balance simplicity, performance, and density. Powered with two quad-core Intel Xeon 5500 series processors, the server supports production-level network infrastructures, web services, virtualization, data centers, and small-office and remote-office applications.

Figure 1-1 shows the external features of the front panel.

**Figure 1-1**      **Front Panel Features**



<b>1</b>	DVD-RW drive	<b>2</b>	Hard drive (up to four)
<b>3</b>	Console connector	<b>4</b>	Reset button <sup>1</sup>
<b>5</b>	Power supply fault LED	<b>6</b>	Memory fault LED
<b>7</b>	CPU fault LED	<b>8</b>	Network activity LED
<b>9</b>	System fault LED	<b>10</b>	Locator button/LED
<b>11</b>	Power button/Power status LED		

1. See the following caution.

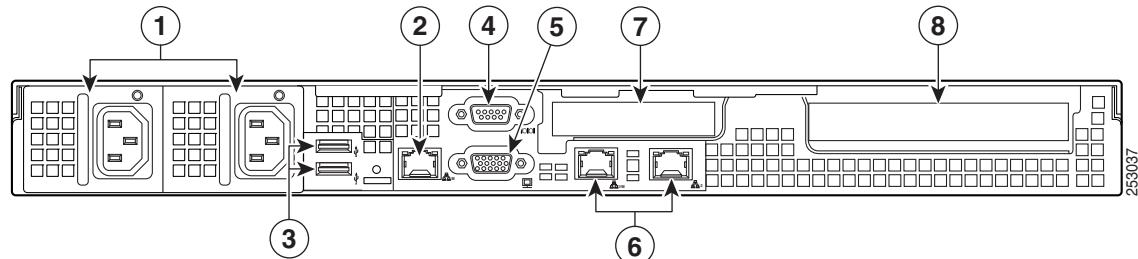


**Caution** Do not use the **Reset** button. This button is for development debugging only. This button will reset memory and CPU settings to the defaults.

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Figure 1-2 shows the external features of the rear panel. A Generation M2 server is shown (the USB ports and the 10/100 Ethernet management port are in slightly different positions for Generation M1).

**Figure 1-2 Rear Panel Features**



<b>1</b>	Power supply (up to two)	<b>2</b>	10/100 Ethernet management port (RJ-45)
<b>3</b>	USB 2.0 connectors (two)	<b>4</b>	Serial connector (DB9)
<b>5</b>	Video connector (DB15 VGA)	<b>6</b>	10/100/1000 Gigabit Ethernet ports (two)
<b>7</b>	Low-profile PCIe card slot	<b>8</b>	Standard-profile PCIe card slot

The Cisco UCS C200 server has the following components and features:

**Table 1-1 Hardware Features of the Server**

Feature or Component	Cisco UCS C200 Server
Enclosure	Single rack unit (1RU) chassis.
Processors	Up to two quad-core Intel Xeon processors.
Memory	12 DIMM <sup>1</sup> slots supporting up to 96 GB of industry-standard DDR3 <sup>2</sup> main memory.
Storage	Up to four internal SAS <sup>3</sup> or SATA <sup>4</sup> hard drives, supporting up to 4 TB total.
Disk Management	<p>Factory-configured RAID<sup>5</sup> support options:</p> <ul style="list-style-type: none"> <li>RAID 0 and 1 support for up to four SATA drives with the integrated SATA controller.</li> </ul> <p><b>Note</b> The integrated ICH10R RAID controller is not compatible for use with VMWare ESX/ESXi Server software.</p> <ul style="list-style-type: none"> <li>RAID 0, 1, and 1E support for up to four SAS or SATA drives with the optional LSI 1064-based controller mezzanine card.</li> <li>RAID 0, 1, 5, 6, 00, 10, 50 and 60 support for up to four SAS or SATA drives with the optional LSI MegaRAID SAS 9260 controller card.</li> </ul> <p>See <a href="#">RAID Controller Considerations, page C-1</a> for more information about RAID in this server.</p>
PCIe I/O	<p>Up to two PCIe<sup>6</sup> expansion cards, plugged into horizontal riser card sockets:</p> <ul style="list-style-type: none"> <li>One standard-profile, half-length, x16-lane, x16 connector (on riser card).</li> <li>One low-profile, half-length, x8-lane, x8 connector (on riser card).</li> </ul>

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**Table 1-1      Hardware Features of the Server (continued)**

Feature or Component	Cisco UCS C200 Server
Network and management I/O	<p>The server provides these rear-panel connectors:</p> <ul style="list-style-type: none"> <li>• Two 10/100/1000 Gigabit Ethernet ports (RJ-45 connectors).</li> <li>• One 10/100 Ethernet management port (RJ-45 connector).</li> <li>• One DB9 serial connector.</li> <li>• One DB15 VGA<sup>7</sup> connector.</li> <li>• Two USB<sup>8</sup> 2.0 connectors.</li> </ul> <p>The server also has one front-panel console connector (with supplied KVM<sup>9</sup> cable, provides DB15 video, DB9 serial, and two USB 2.0 connectors).</p>
Removable media devices	One internal DVD-RW drive.
Power	Up to two power supplies, each with a maximum output of 650W (redundant power supply is optional).
Cooling	Five internal fans that force front-to-rear cooling; also one fan in each power supply.

1. DIMM = dual inline memory module
2. DDR = double data rate (transfer mode)
3. SAS = serial attached SCSI
4. SATA = serial advanced technology attachment
5. RAID = redundant array of independent disks
6. PCIe = peripheral component interconnect express
7. VGA = video graphics array
8. USB = universal serial bus
9. KVM = keyboard, video, mouse

See [Appendix A, “Technical Specifications”](#) for more physical, environmental, and power details.

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## **Installing the Server**

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This chapter describes how to install the server and includes the following sections:

- [Unpacking and Inspecting the Server, page 2-2](#)
- [Preparing for Installation, page 2-3](#)
- [Installing the Server Into a Rack, page 2-4](#)
- [Initial Server Setup, page 2-8](#)
- [Configuring BIOS Settings and Updating BIOS Firmware, page 2-13](#)
- [Updating the CIMC Firmware, page 2-24](#)
- [RAID Configurations on Hard Drives, page 2-24](#)



**Note**

Before you install, operate, or service a server, review the [Regulatory Compliance and Safety Information for Cisco UCS C-Series Servers](#) for important safety information.

---



**Warning**

### **IMPORTANT SAFETY INSTRUCTIONS**

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.** Statement 1071

---



**Warning**

**Only trained and qualified personnel must be allowed to install, replace, or service this equipment.**

Statement 1030

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# Unpacking and Inspecting the Server


**Tip**

Keep the shipping container in case the server requires shipping in the future.

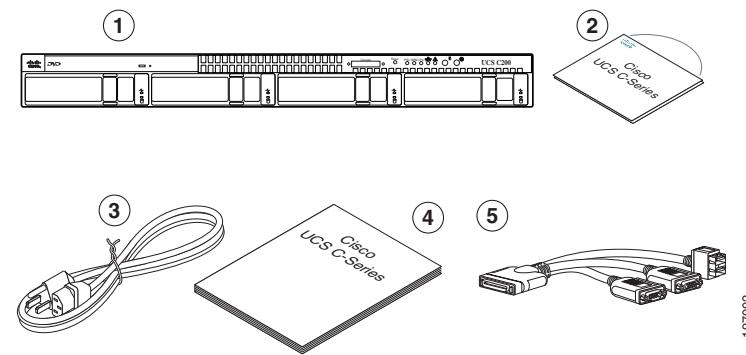

**Note**

The chassis is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately.

To inspect the shipment, follow these steps:

- Step 1** Remove the server from its cardboard container—save all packaging material.
- Step 2** Compare the shipment to the equipment list provided by your customer service representative and [Figure 2-1](#). Verify that you have all items.
- Step 3** Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:
  - Invoice number of shipper (see the packing slip)
  - Model and serial number of the damaged unit
  - Description of damage
  - Effect of damage on the installation

**Figure 2-1** *Shipping Box Contents*



<b>1</b>	Server	<b>2</b>	Drivers and Utilities disc
<b>3</b>	Power cord (optional, up to two)	<b>4</b>	Documentation
<b>5</b>	KVM cable		

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# Preparing for Installation

This section includes the following topics:

- Installation Guidelines, page 2-3
- Rack Requirements, page 2-4
- Required Equipment, page 2-4

## Installation Guidelines

**Warning**

**To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 35° C (95° F).**

Statement 1047

**Warning**

**The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.**

Statement 1019

**Warning**

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 15 A.**

Statement 1005

**Warning**

**Installation of the equipment must comply with local and national electrical codes.**

Statement 1074

When installing the server, follow these guidelines:

- Plan your site configuration and prepare the site before installing the server. See the *Cisco UCS Site Preparation Guide* for the recommended site planning tasks.
- Ensure that there is adequate space around the server to allow for servicing and for adequate airflow. The airflow in this server is from front to back.
- Ensure that the air-conditioning meets the thermal requirements listed in [Appendix A, “Technical Specifications.”](#)
- Ensure that the cabinet or rack meets the requirements listed in the “[Rack Requirements](#)” section on [page 2-4](#).
- Ensure that the site power meets the power requirements listed in [Appendix A, “Technical Specifications.”](#) If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

**Caution**

Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations from fluctuating data traffic patterns.

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## Rack Requirements

This section provides the requirements for the standard open racks, assuming an external ambient air temperature range of 32 to 95°F (0 to 35°C).

The rack must be of the following type:

- Standard 19-inch (48.3-cm) wide, four-post EIA rack, with mounting posts that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992.
- The rack post holes can be square or round when you use the supplied slide rails.
- The minimum vertical rack space per server must be one rack unit (RU), equal to 1.75 inches (4.45 cm).



**Tip**

The Cisco R-Series racks and RP-Series PDUs have been designed for optimum performance with Cisco products and are available from Cisco.

## Required Equipment

The slide rails supplied by Cisco Systems do not require any tools for installation, but you might want to use a tape measure and level to help level the slide rails during installation.

## Installing the Server Into a Rack

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

This section describes how to install the server into a rack.



**Warning**

**To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

**This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**

**When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**

**If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.**  
Statement 1006

To install the slide rails and the server into a rack, follow these steps:

**Step 1**

Install the slide rails into the rack:



**Tip**

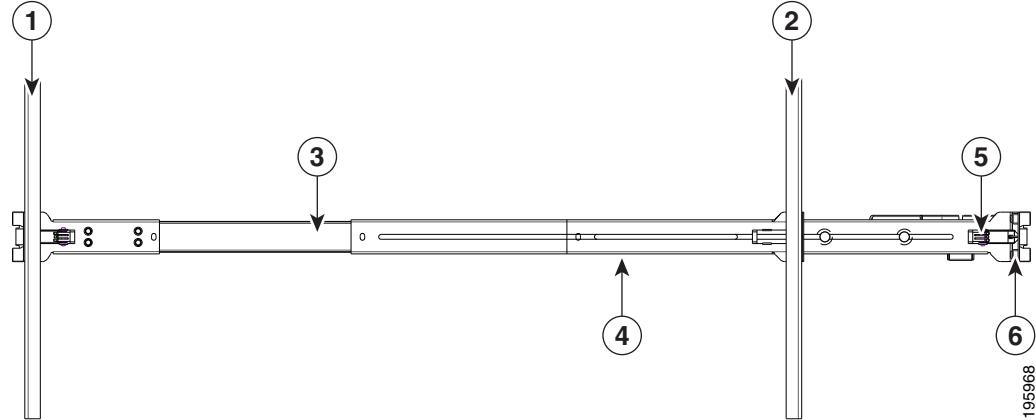
Use two people to help keep the slide rails and server level during installation. You can use a tape measure and level or count the holes in the rack posts to ensure that the slide rails and server are level.

- a. Align the slide-rail assembly inside the rack posts with the length-adjustment bracket (item 4) toward the rear of the rack (see [Figure 2-2](#)).

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- b. Compress the length-adjustment bracket until the mounting pegs (item 6) and locking clips (item 5) on the slide-rail assembly engage the desired rack holes on the front and rear rack posts.
- c. Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

**Figure 2-2 Attaching a Slide-Rail Assembly**



1	Front-left rack post	2	Rear-left rack post
3	Slide-rail assembly	4	Length-adjustment bracket
5	Locking clip (one on each end of assembly)	6	Mounting pegs (two on each end of assembly)

- d. Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are level and at the same height with each other.
- e. Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.



**Tip**

You can optionally use the #2 Phillips screws that come with the slide rails to increase stability after installation. These screws can be installed on the front attachment bracket on each assembly, but are not required.

**Step 2**

Attach mounting brackets to the server:

- a. Set a mounting bracket (item 3) on the side of the server, aligning its keyed holes over the pegs on the server (item 2). The plastic installation release clip (item 5) on the bracket should be toward the server front. See [Figure 2-3](#).
- b. Push the mounting bracket toward the server rear until the locking clip clicks over the server peg.
- c. Attach the remaining mounting bracket to the opposite side of the server.

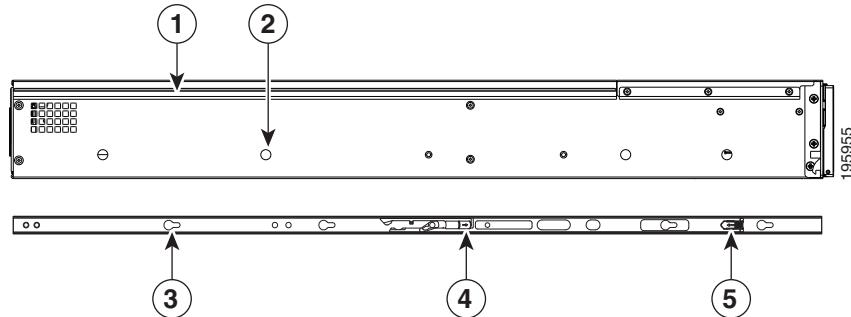


**Tip**

You can optionally use the #1 Phillips screws that come with the slide rails to increase stability after installation. You can install two of these screws on each side of the server to more permanently attach the mounting brackets to each side of the server, but they are not required.

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**Figure 2-3 Attaching Mounting Brackets to the Server**



<b>1</b>	Rear of server	<b>2</b>	Mounting peg (four)
<b>3</b>	Mounting bracket	<b>4</b>	Removal release clip
<b>5</b>	Installation release clip		

**Step 3** Insert the server into the slide rails:

- Align the mounting brackets that are attached to the server sides with the front of the empty slide rails.
- Push the server into the slide rails until it stops at the internal stops.
- Push the plastic installation release clip on each mounting bracket toward the server rear (see item 4 in [Figure 2-3](#)), and then continue pushing the server into the rack until its front flanges touch the rack posts.

**Step 4** Attach the (optional) cable management arm (CMA) to the rear of the slide rails:

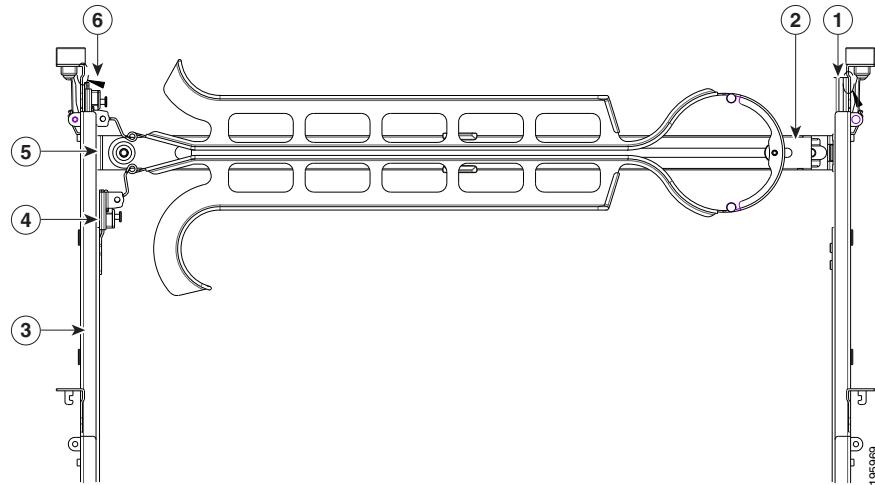


**Note** The orientation in these instructions refers to a view from the front of the server.

- Slide the plastic clip on the right end of the CMA length-adjustment slider (item 2) into the rear of the right slide rail (item 1) until it clips onto the plastic retaining flange inside the slide rail. See [Figure 2-4](#).
- Expand the CMA length-adjustment slider (item 2) until its left end aligns with the rear of the left slide-rail assembly (item 3).
- Slide the innermost CMA attachment clip (item 4) into the rear of the left slide rail (item 3) and clip it onto the CMA flange that is on the mounting bracket that is attached to the server.
- Attach the two-hole slotted bracket (item 5) that is on the left end of the CMA length-adjustment slider to the left slide rail. Fit the two-hole slotted bracket over the two pegs inside the slide rail.
- Attach the outermost CMA attachment clip (item 6) onto the CMA flange that is on the left slide rail.

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**Figure 2-4** Attaching the Cable Management Arm



<b>1</b>	Rear of right slide rail (plastic retaining flange is inside the rail)	<b>2</b>	CMA length-adjustment slider
<b>3</b>	Rear of left slide rail assembly	<b>4</b>	Innermost CMA attachment clip
<b>5</b>	Two-hole slotted bracket on end of CMA length-adjustment slider	<b>6</b>	Outermost CMA attachment clip

**Step 5** Continue with the “[Connecting and Powering On the Server \(Standalone Mode\)](#)” section on page 2-8.

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## Initial Server Setup

This section contains the following topics:

- [Connecting and Powering On the Server \(Standalone Mode\), page 2-8](#)
- [Defining Static Network Settings Using a Script File, page 2-11](#)
- [NIC Modes and NIC Redundancy Settings, page 2-12](#)

## Connecting and Powering On the Server (Standalone Mode)



**Note**

This section describes how to power on the server, assign an IP address, and connect to server management when using the server *in standalone mode*. To use the server in UCS integration, specific cabling and settings are required. See [Installing a Release 1.2\(2\) or Later Server for Cisco UCS Integration, page D-1](#).



**Note**

The server is shipped with a default NIC mode called *Shared LOM*, default NIC redundancy is active-active, and DHCP is enabled. Shared LOM mode enables the two 1Gb Ethernet ports to access the Cisco Integrated Management Interface (CIMC). If you want to use the 10/100 management ports or a Cisco network adapter card port to access the CIMC, you must first connect to the server and change the NIC mode as described in [Step 3](#) of the following procedure. In that step, you can also change the NIC redundancy and set static IP settings.

Use the following procedure to perform initial setup of the server.

**Step 1**

Attach a power cord to each power supply in your server, and then attach the power cord to a grounded AC power outlet. See the “[Power Specifications](#)” section on page A-2 for power specifications.

Wait for approximately two minutes to let the server boot in standby power during the first bootup.

You can verify power status by looking at the Power Status LED on the front panel (see [Figure 1-1 on page 1-1](#)):

- Off—The server is not receiving power. Check the power cord connections and the power source of the facility.
- Blinking green—The server is in standby power mode. Power is supplied only to the service processor and some motherboard functions.
- Solid green—The server is in main power mode. Power is supplied to all server components.



**Note**

During bootup, the server beeps once for each USB device that is attached to the server. Even if there are no external USB devices attached, there is a short beep for each virtual USB device such as a virtual floppy drive, CD/DVD drive, keyboard, or mouse. A beep is also emitted if a USB device is hot-plugged or hot-unplugged during BIOS power-on self test (POST), or while you are accessing the BIOS Setup utility or the EFI shell.

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- Step 2** Use the supplied KVM cable to connect a keyboard and VGA monitor to the console connector on the front panel (see [Figure 1-1 on page 1-1](#)).

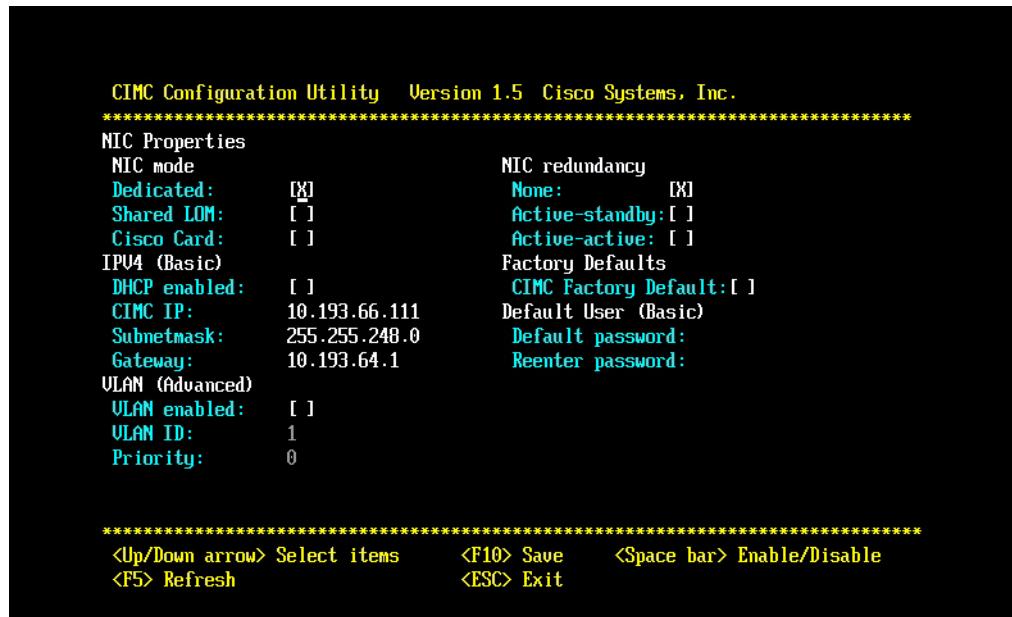


**Note**

Alternatively, you can use the VGA and USB ports on the rear panel. However, you cannot use the front panel console connector VGA and the rear panel VGA at the same time. If you are connected to one VGA connector and you then connect a video device to the other connector, the first VGA connector is disabled. You can then reactivate the first VGA connector only by rebooting the server.

- Step 3** Set NIC mode, NIC redundancy, and choose whether to enable DHCP or set static network settings:

- Press the **Power** button to boot the server. Watch for the prompt to press F8.
- During bootup, press **F8** when prompted to open the BIOS CIMC Configuration Utility.



- Set the NIC mode to your choice for which ports you want to use to access the CIMC for server management (see [Figure 1-2 on page 1-2](#) for identification of the ports):

- Dedicated—The two 10/100 management ports are used to access the CIMC. You have to select a NIC redundancy and IP setting.
- Shared LOM (default)—The two 1Gb Ethernet ports are used to access the CIMC. This is the factory default setting, along with Active-active NIC redundancy and DHCP enabled.
- Cisco Card—The ports on an installed Cisco network adapter card are used to access the CIMC. You have to select a NIC redundancy and IP setting.



**Note**

The Cisco Card NIC mode is currently supported only with a Cisco UCS P81E Virtual Interface Card (N2XX-ACPCI01) that is installed in PCIe slot 2 (see [Figure 3-15 on page 3-27](#)). See also [Special Considerations for the Cisco UCS P81E Virtual Interface Card \(N2XX-ACPCI01\)](#), page 3-27.

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- d. Use this utility to change the NIC redundancy to your preference. This server has three possible NIC redundancy settings:
  - None—The Ethernet ports operate independently and do not fail over if there is a problem.
  - Active-standby—If an active Ethernet port fails, traffic fails over to a standby port.
  - Active-active—All Ethernet ports are utilized simultaneously.
- e. Choose whether to enable DHCP for dynamic network settings, or enter static network settings.



**Note** Before you enable DHCP, your DHCP server must be preconfigured with the range of MAC addresses for this server. The MAC address is printed on a label on the rear of the server. This server has a range of six MAC addresses assigned to the CIMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

- f. Optional: Use this utility to make VLAN settings, and to set a default CIMC user password.



**Note** Changes to the settings take effect after approximately 45 seconds. Refresh with **F5** and wait until the new settings appear before you reboot the server in the next step.

- g. Press **F10** to save your settings and reboot the server.



**Note** If you chose to enable DHCP, the dynamically assigned IP and MAC addresses are displayed on the console screen during bootup.



**Tip** There is an alternate procedure for defining static settings by automating with a script. See the “[Defining Static Network Settings Using a Script File](#)” section on page 2-11.

**Step 4** Connect to the CIMC for server management. Connect Ethernet cables from your LAN to the server by using the ports that you selected by your NIC Mode setting in [Step 3](#). The Active-active and Active-passive NIC redundancy settings require you to connect to two ports.

**Step 5** Use a browser and the IP address of the CIMC to connect to the CIMC Setup Utility. The IP address is based upon the settings that you made in [Step 3](#) (either a static address or the address assigned by your DHCP server).



**Note** The default username for the server is *admin*. The default password is *password*.

**Step 6** To manage the server, see the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide* for instructions on using those interfaces. The links to these documents are in the C-Series documentation roadmap:

<http://www.cisco.com/go/unifiedcomputing/c-series-doc>

To install or replace hardware components, see the “[Maintaining the Server](#)” section on page 3-1.

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## Defining Static Network Settings Using a Script File

This section describes how to define static network settings for multiple servers by automating the configuration process with a script file.

**Step 1** Use a text editor to create a file named **network.cfg**.

**Step 2** Create the contents of **network.cfg** in the following format. Use only the tags that you want to set.

```
dhcp-enabled:  
v4-addr:  
v4-netmask:  
v4-gateway:  
vlan-enabled:  
vlan-id:  
vlan-priority:  
password:  
mode:  
redundancy:
```

For example, to disable DHCP, set IP address, subnet mask, gateway, and user password, you can use the following sample values:

```
dhcp-enabled: 0  
v4-addr: 10.193.70.102  
v4-netmask: 255.255.255.0  
v4-gateway: 10.193.70.1  
password: nonpasswd  
mode:  
redundancy:
```

**Step 3** Use a text editor to create a file named **startup.nsh**. with the following contents:

```
fs0:  
cimcconfig
```

**Step 4** Copy your **network.cfg** file and your **startup.nsh** file to a USB thumb drive.

**Step 5** Insert the USB thumb drive into a USB port on the server.

**Step 6** Press and release the **Power** button to boot the server.

**Step 7** Observe the booting process and press **F6** when prompted to enter the BIOS Boot Manager.

**Step 8** Select EFI as the boot device and then press Enter.

The server power cycles and launches the configuration utility, which runs the **startup.nsh** file. Any errors are printed to the screen and an **errors.txt** file.

**Step 9** Remove the USB thumb drive, alter the **network.cfg** file with your next IP address, and then insert the USB thumb drive into the next server that you want to configure.

**Step 10** After the server has been assigned an IP address, you can use that address to access the service processor's GUI or CLI management system. See the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*.

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## NIC Modes and NIC Redundancy Settings

This server has the following NIC mode settings that you can choose from:

- Dedicated—The two 10/100 management ports are used to access the CIMC. You have to select a NIC redundancy and IP setting.
- Shared LOM (default)—The two 1Gb Ethernet ports are used to access the CIMC. This is the factory default setting, along with Active-active NIC redundancy and DHCP enabled.
- Cisco Card—The ports on an installed Cisco network adapter card are used to access the CIMC. You have to select a NIC redundancy and IP setting.



**Note** The Cisco Card NIC mode is currently supported only with a Cisco UCS P81E Virtual Interface Card (N2XX-ACPCI01) that is installed in PCIe slot 2 (see [Figure 3-15 on page 3-27](#)). See also [Special Considerations for the Cisco UCS P81E Virtual Interface Card \(N2XX-ACPCI01\), page 3-27](#).

This server has the following NIC redundancy settings that you can choose from:

- None—The Ethernet ports operate independently and do not fail over if there is a problem.
- Active-standby—if an active Ethernet port fails, traffic fails over to a standby port.
- Active-active—All Ethernet ports are utilized simultaneously.

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# Configuring BIOS Settings and Updating BIOS Firmware

This section contains information about the system BIOS and contains the following sections:

- [Changing the Configuration of a BIOS Menu Item, page 2-13](#)
- [Overview of the BIOS Setup Pages, page 2-14](#)
- [Updating the BIOS Firmware, page 2-15](#)
- [Recovering a Corrupted BIOS, page 2-19](#)
- [Motherboard Jumpers, page 2-20](#)

## Changing the Configuration of a BIOS Menu Item

You can change the BIOS settings for your server by using the procedure in this section. Detailed instructions are also printed on the BIOS screens.

---

**Step 1** Enter the BIOS setup utility by pressing the **F2** key when prompted during bootup.



**Note** The version and build of the current BIOS are displayed on the Main page of the utility.

---

**Step 2** Use the arrow keys to select the BIOS menu page.

**Step 3** Highlight the field to be modified by using the arrow keys.

**Step 4** Press **Enter** to select the field that you want to change, and then modify the value in the field.

**Step 5** Press the right arrow key until the Exit menu screen is displayed.

**Step 6** Follow the instructions on the Exit menu screen to save your changes and exit the setup utility (or Press **F10**). You can exit without saving changes by pressing **Esc**.

---

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## Overview of the BIOS Setup Pages

Table 2-1 contains summary descriptions of the BIOS setup pages. Detailed descriptions of each setup field on the pages are printed on the BIOS screens.

**Table 2-1 Overview of BIOS Setup Utility Pages**

Screen	Contents
Main	<ul style="list-style-type: none"> <li>General information about the BIOS version and system memory installed</li> <li>Settings to enable or disable quiet boot and POST error pass</li> <li>Settings to define system date and time</li> </ul>
Advanced	<p>Configuration submenus used to define settings for:</p> <ul style="list-style-type: none"> <li>Processors</li> <li>Memory</li> <li>Mass storage controllers</li> <li>Serial port</li> <li>USB</li> <li>PCIe</li> </ul>
Security	Settings used to install and change the BIOS administrator and user passwords
Server Management	<p>Settings you can use to:</p> <ul style="list-style-type: none"> <li>Manage non-maskable interrupt (NMI)</li> <li>Clear the system event log</li> <li>Define boot time-out</li> <li>Configure plug and play</li> <li>Configure advanced configuration and power interface (ACPI) for your operating systems</li> <li>Set console redirection on the serial port</li> <li>View system information such as the serial number and BMC revision</li> </ul>
Boot Options	<p>Settings you can use to:</p> <ul style="list-style-type: none"> <li>Define network boot</li> <li>Define boot time-out for F2 prompts</li> <li>Define boot order for devices, boot retries, and USB device boot order</li> <li>Define boot order for CDROM devices, hard disk drives, and floppy drives</li> </ul>
Boot Manager	List of available boot devices that you can boot from immediately by choosing the device from this screen
Error Management	Lists system errors with descriptions and severity
Exit	<ul style="list-style-type: none"> <li>Options that you can use to exit while either saving or discarding changes</li> <li>Options to save current values as a user default, or load default values</li> </ul>

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## Updating the BIOS Firmware

You can update the BIOS firmware either by using the EFI interface during bootup, or by updating from a running Windows or Linux operating system (OS).

- [Determining the Current BIOS Version, page 2-15](#)
- [Updating the BIOS Firmware by Using the EFI Interface, page 2-15](#)
- [Updating the BIOS Firmware From A Windows Operating System, page 2-16](#)
- [Updating the BIOS Firmware From A Linux Operating System, page 2-17](#)
- [iFlash32 Utility Command Options, page 2-18](#)

### Determining the Current BIOS Version

There are two ways you can view the current version and build number of the BIOS:

- Press F2 during server bootup to open the BIOS setup utility and look at the listing on the Main page.
- From within a running Windows or Linux OS, use the iFlash32 command with the **-i** option. See the [“iFlash32 Utility Command Options” section on page 2-18](#).

### Updating the BIOS Firmware by Using the EFI Interface

Use the following procedure to update the BIOS firmware by using the EFI interface. Instructions are included for using local media or a virtual device.

---

**Step 1** Download the BIOS update package from Cisco.com and extract it to a temporary location.

To find the downloads for your server, see the following URL, then click **Unified Computing**, log in, and then click **Cisco UCS C-Series Rack-Mount Servers**.

<http://www.cisco.com/cisco/web/download/index.html>

**Step 2** Prepare the BIOS update files on either local media for local upgrade, or as a virtual device for remote upgrade:

- **For local upgrade**—Perform these steps before you go to [Step 3](#):
  - Copy the contents of the extracted `bios/uefi/` folder to the root directory a USB thumb drive.
  - Connect a VGA monitor and USB keyboard to the Cisco C-Series server.
  - Insert the USB thumb drive into a USB port on the Cisco C-Series server.
- **For remote upgrade**—Perform these steps before you go to [Step 3](#):
  - Copy the contents of the extracted `bios/uefi/` folder to the root directory a USB thumb drive that is connected to your workstation.
  - Use a browser to connect to the CIMC Manager software on the server that you are upgrading. Enter the CIMC IP address for that server in the address field of the browser, then enter your user name and password.
  - Launch a KVM Console window (click the KVM keyboard icon).
  - When the Virtual KVM Console window launches, select **Tools > Launch Virtual Media**.
  - In the Virtual Media Session window, click **Add Image** and then use the dialog to navigate to the USB thumb drive that contains the contents of the `bios/uefi/` folder.

The USB thumb drive is displayed in the Client View pane.

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- f. In the Virtual Media Session window, check the check box in the **Mapped** column for the USB thumb drive that you added, and then wait for mapping to complete. Observe the progress in the Details pane.

**Step 3** Boot the server and press **F6** when prompted to get to the Boot Option screen.

**Step 4** On the Boot Option screen, select **EFI Shell**.

**Step 5** Wait for the on-screen message that says that the update is complete and the prompt to reboot the server. The update typically takes about three minutes.

**Step 6** Reboot the server to complete the update.

## Updating the BIOS Firmware From A Windows Operating System

Use the following procedure to update the BIOS firmware from a running Windows host OS.



**Note** The required version of the iFlash32 utility that is used in this procedure is iFlash32 Version 1.1, Build 3 or later. This utility is included in the BIOS firmware update package. See [Determining the iFlash32 Utility Version and Build, page 2-18](#).

**Step 1** Boot the server using a hard drive that has the Windows host OS installed.

**Step 2** Download the BIOS update package for `Windows_x86` or `Windows_x64` and the C200 server from Cisco.com and extract it to a temporary folder on the server's host OS.

To find the downloads for your server, see the following URL, then click **Unified Computing**, log in, and then click **Cisco UCS C-Series Rack-Mount Servers**.

<http://www.cisco.com/cisco/web/download/index.html>



**Note** Alternatively, if you do not have a browser installed on the server, you can download the package to a separate computer and then transfer the files by using a USB thumb drive. If you use this method, copy the contents of the extracted `Windows_x86` or `Windows_x64` folder to the root directory of the USB thumb drive, then insert the thumb drive into a USB port on the C200 server.

**Step 3** Install the BIOS update driver (`flashud.sys`) to the OS environment:

- a. At a command prompt within your Windows OS, change directory to the location of the folder that you extracted in **Step 2**:
  - If you extracted to a location on the host OS, change directory to that folder.
  - If you are transferring the files with a USB thumb drive, change directory to that location using the drive letter assigned to the thumb drive.
- b. Enter the following command to install the BIOS update driver to your OS environment:

**install.cmd**

**Step 4** At a command prompt within your OS, use the iFlash32 utility to update the system BIOS in non-interactive mode by entering the following command and options:

**iflash32 /u [BIOS file name] /ni**

See the “[iFlash32 Utility Command Options](#)” section on page 2-18 for information about available options.

**Step 5** Reboot the server to complete the update.

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## Updating the BIOS Firmware From A Linux Operating System

Use the following procedure to update the BIOS firmware from a running host OS.

**Note**

The required version of the iFlash32 utility that is used in this procedure is iFlash32 Version 1.1, Build 3 or later. This utility is included in the BIOS firmware update package. See [Determining the iFlash32 Utility Version and Build, page 2-18](#).

**Step 1**

Boot the server using a hard drive that has the Linux host OS installed.

**Step 2**

Download the BIOS update package for Linux and the C200 server from Cisco.com and extract it to a temporary folder on the server's host OS.

To find the downloads for your server, see the following URL, then click **Unified Computing**, log in, and then click **Cisco UCS C-Series Rack-Mount Servers**.

<http://www.cisco.com/cisco/web/download/index.html>

**Note**

Alternatively, if you do not have a browser installed on the server, you can download the package to a separate computer and then transfer the files by using a USB thumb drive. If you use this method, copy the contents of the extracted `Linux` folder to the root directory of the USB thumb drive, then insert the thumb drive into a USB port on the C200 server.

**Step 3**

Change directory to the folder that contains the BIOS update package.

- If you extracted to a location on the host OS, change directory to that folder, then continue with [Step 4](#).
- If you are transferring the files with a USB thumb drive, perform the following steps:
  - a. At a Linux prompt, enter the following command to verify that the USB thumb drive is detected:  
**fdisk -l**  
If the thumb drive is detected, it appears as `/dev/sdb1` in the list of detected SCSI devices.
  - b. Mount the USB thumb drive as a directory in the Linux file system:  
**mount /dev/sdb1 /mnt/usb**
  - c. Change directory to the folder on the USB thumb drive that contains the BIOS update package. For example:  
**cd /mnt/usb/c250**

**Step 4**

Run the iFlash32 utility to update the system BIOS in non-interactive mode by entering the following command and options:

**iflash32 - ./iflash32 -u -ni [BIOS file name].cap**

See the “[iFlash32 Utility Command Options](#)” section on page 2-18 for information about the available options.

**Step 5**

Reboot the server to complete the update.

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## iFlash32 Utility Command Options



**Note** The command syntax shown below is for Linux. For Windows, use “/” in place of “-” for all options.

You can use the iFlash32 command with the following options:

- To view the command-line help page:  
**iflash32 -h**
- To update the system BIOS:  
**iflash32 -u [BIOS file name]**
- To update the system BIOS in non-interactive mode:  
**iflash32 -u [BIOS file name] -ni**
- To display BIOS file information:  
**iflash32 -i [BIOS file name]**
- To display the current system BIOS version:  
**iflash32 -i**
- To restore the BIOS settings to the factory defaults:  
**iflash32 -rd**

## Determining the iFlash32 Utility Version and Build

Determine the version and build of the iFlash32 utility as follows:

- 
- Step 1** Copy the iFlash32.exe file to a USB thumb drive.

The iFlash32 utility is included with the BIOS firmware download. Find the file in the directory structure where you extracted the update package:

- For Windows: ...\\c250-BOS\\[BIOS version]\\bios\\windows\\[Windows version]\\
- For Linux: ...\\c250-BIOS\\[BIOS version]\\bios\\linux\\

- Step 2** Boot the server, and when prompted, press **F6** to open the Boot Option menu.

- Step 3** Select **EFI Shell** to boot the server to the EFI shell.

- Step 4** At the shell prompt, enter the **map -r** command to map the USB thumb drive.

- Step 5** At the shell prompt, enter the **fs0:** to change the shell to the mapped USB thumb drive.

- Step 6** Enter the command to display the iFlash32 information:

- For Windows: **iflash /i**
- For Linux: **iflash -i**

The output should be similar to the following:

```
Iflash32 BIOS Update Utility Ver 1.1 Build 3
Copyright (C) 2009-2010 Cisco Systems Inc.
```

---

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## Recovering a Corrupted BIOS

There are two ways that you can recover a corrupted BIOS:

- You can use the CIMC management interface, either GUI or CLI. For instructions, refer to the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*.
- You can use the BIOS recovery function of jumper J1E5 on the motherboard. For instructions, refer to the “[Using the BIOS Recovery Jumper J1E5](#)” section on page 2-19.

### Using the BIOS Recovery Jumper J1E5

This jumper is adjacent to the CMOS battery (see [Figure 2-5 on page 2-20](#)). You can use this jumper to force the server to flash a new BIOS, in the case of a system hang. For example, if the system hangs after a BIOS update, use this procedure to force the server to look for the new firmware.

- 
- Step 1** Download the BIOS update package and extract it to a temporary location.
- Step 2** Copy the contents of the extracted UEFI folder to the root directory a USB thumb drive.
- Step 3** Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- Step 4** Disconnect all power cords from the power supplies.
- Step 5** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- 
- Step 6** Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- Step 7** Move the shorting jumper to pins 1 and 2 of the J1E5 header (see [Figure 2-5 on page 2-20](#)).
- Step 8** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 9** Insert the USB thumb drive into a USB port on the server.
- Step 10** Return the server to main power mode by pressing the **Power** button on the front panel. The server is in main power mode when the Power LED is green.



**Note** You must allow the entire server to reboot to main power mode to complete the recovery. This is because the state of the J1E5 jumper cannot be determined without the host CPU running. The server automatically boots into the UEFI shell and updates the BIOS from the USB thumb drive.

- 
- Step 11** Wait for server to complete the BIOS update, then remove the USB thumb drive from the server.
- Step 12** Press the **Power** button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 13** Remove the top cover from the server.

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**Step 14** Move the shorting jumper from header pins 1 and 2, back to its default position on pins 2 and 3.



**Note** If you do not move the jumper, the server forces a recovery of the new BIOS every time that you power cycle the server.

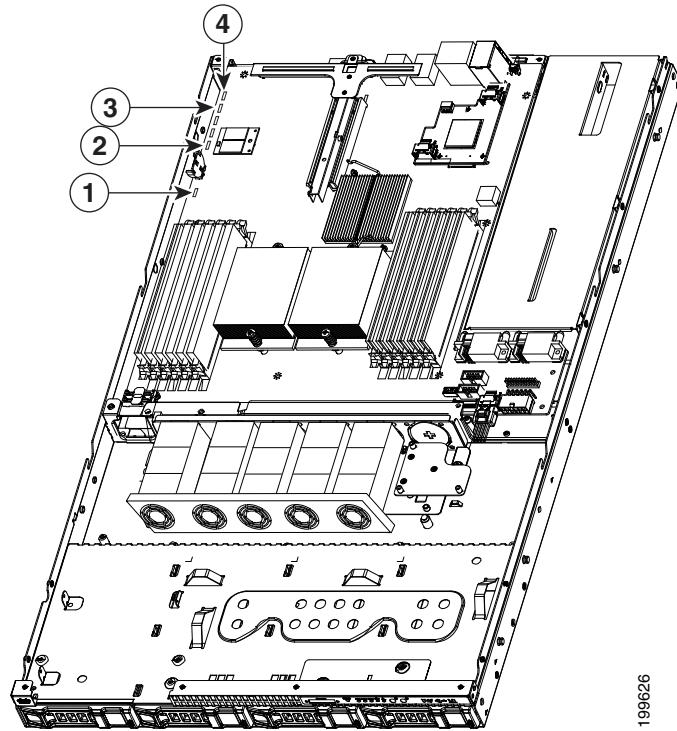
**Step 15** Replace the top cover, replace the server in the rack, replace power cords and any other cables, then power on the server by pressing the **Power** button.

## Motherboard Jumpers

These jumpers are adjacent to the CMOS battery (see [Figure 2-5](#)). This section contains the following topics:

- [Clearing the CIMC Admin Password Using Jumper J45](#), page 2-21
- [Using the Clear CMOS Jumper J1E6](#), page 2-22
- [Clearing the BIOS Admin Password Using Jumper J1E4](#), page 2-23

**Figure 2-5 Service Jumper Locations**



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<b>1</b>	Jumper J1E6 (clear CMOS)	<b>3</b>	Jumper J45 (clear CIMC password)
<b>2</b>	Jumper J1E5 (BIOS recovery)	<b>4</b>	Jumper J1E4 (clear BIOS password)

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## Clearing the CIMC Admin Password Using Jumper J45

This procedure describes how to clear the CIMC admin password back to the default in case the user-selected password is lost or forgotten.

- 
- Step 1** Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- Step 2** Disconnect all power cords from the power supplies.
- Step 3** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- Step 4** Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- Step 5** Move the shorting jumper to pins 2 and 3 of the J45 header (see [Figure 2-5 on page 2-20](#)).
- Step 6** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 7** Return the server to main power mode by pressing the **Power** button on the front panel. The server is in main power mode when the Power LED is green.



**Note** You must allow the entire server to reboot to main power mode to complete the password reset. This is because the state of the J45 jumper cannot be determined without the host CPU running. The password is then cleared.

- Step 8** Press the **Power** button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 9** Remove the top cover from the server.
- Step 10** Remove the shorting jumper from the header pins.



**Note** If you do not remove the jumper, the password is cleared every time that you power-cycle the server.

- Step 11** Replace the top cover, replace the server in the rack, replace power cords and any other cables, then power on the server by pressing the **Power** button.

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## Using the Clear CMOS Jumper J1E6

You can use this jumper to clear the server's CMOS settings in the case of a system hang. For example, if the server hangs because of incorrect settings and does not boot, use this jumper to invalidate the settings and reboot with defaults.

- 
- Step 1** Power off the server as described in the “Shutting Down and Powering Off the Server” section on [page 3-6](#).
  - Step 2** Disconnect all power cords from the power supplies.
  - Step 3** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- Step 4** Remove the top cover as described in the “Removing and Replacing the Server Top Cover” section on [page 3-8](#).
- Step 5** Move the shorting jumper to pins 2 and 3 of the J1E6 header (see [Figure 2-5 on page 2-20](#)).
- Step 6** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 7** Return the server to main power mode by pressing the **Power** button on the front panel. The server is in main power mode when the Power LED is green.



**Note** You must allow the entire server, not just the service processor, to reboot to main power mode to complete the reset. This is because the state of the J1E6 jumper cannot be determined without the host CPU running.

- Step 8** Press the **Power** button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 9** Remove the top cover from the server.
- Step 10** Remove the shorting jumper from the J1E6 header pins.



**Note** If you do not remove the J1E6 jumper, the CMOS settings are reset to the default every time that you power-cycle the server.

- 
- Step 11** Replace the top cover, replace the server in the rack, replace power cords and any other cables, then power on the server by pressing the **Power** button.
-

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## Clearing the BIOS Admin Password Using Jumper J1E4

This procedure describes how to clear the BIOS admin password for the BIOS back to the default in case the user-selected password is lost or forgotten.

- 
- Step 1** Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
  - Step 2** Disconnect all power cords from the power supplies.
  - Step 3** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- Step 4** Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- Step 5** Move the shorting jumper to pins 2 and 3 of the J1E4 header (see [Figure 2-5 on page 2-20](#)).
- Step 6** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 7** Return the server to main power mode by pressing the **Power** button on the front panel. The server is in main power mode when the Power LED is green.



**Note** You must allow the entire server to reboot to main power mode to complete the password reset. This is because the state of the jumper cannot be determined without the host CPU running. The password is then cleared.

- Step 8** Press the **Power** button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 9** Remove the top cover from the server.
- Step 10** Remove the shorting jumper from the header pins.



**Note** If you do not remove the jumper, the password is cleared every time that you power-cycle the server.

- Step 11** Replace top cover, replace the server in the rack, replace power cords and any other cables, then power on the server by pressing the **Power** button.

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## Updating the CIMC Firmware

The server uses CIMC firmware obtained from and certified by Cisco. After you have downloaded a CIMC firmware image from Cisco, you can use it to update the firmware on your server. Cisco also provides release notes with each firmware image.

To find the downloads for your server, see the following URL, then click **Unified Computing**, log in, and then click **Cisco UCS C-Series Rack-Mount Servers**.

<http://www.cisco.com/cisco/web/download/index.html>

For instructions on updating the CIMC firmware, refer to the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*. See the documentation roadmap at the following URL:

<http://www.cisco.com/go/unifiedcomputing/c-series-doc>

## RAID Configurations on Hard Drives



**Note**

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If your server uses an LSI MegaRAID card for mass storage control, you might hear beeps coming from the card when you make changes to the array. See the “[LSI MegaRAID Card Beep Codes](#)” section on [page 3-32](#) for more information.

---

For information about the RAID options in this server and how to access third-party RAID utilities, see [RAID Controller Considerations, page C-1](#).



# CHAPTER **3**

## Maintaining the Server

---

This chapter describes how to diagnose hardware problems with status LEDs and how to install or replace hardware components, and includes the following sections:

- [Status LEDs, page 3-1](#)
- [Preparing for Component Installation, page 3-6](#)
- [Installing or Replacing Components, page 3-10](#)

### Status LEDs

This section describes the locations and interpretations of LEDs on the server that can provide status and troubleshooting information. This section includes the following topics:

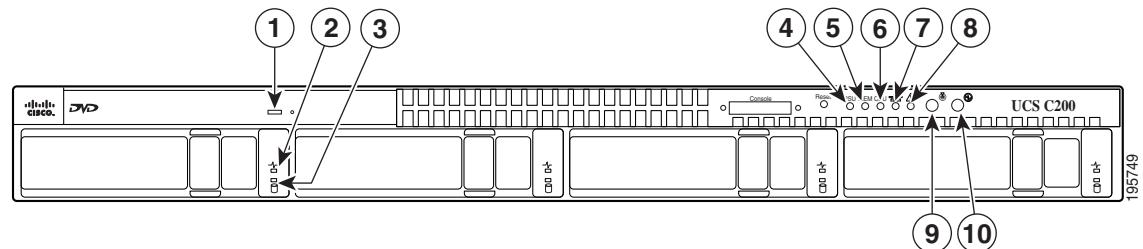
- [Front Panel LEDs, page 3-2](#)
- [Rear Panel LEDs, page 3-3](#)

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## Front Panel LEDs

Figure 3-1 shows the names and locations of the front panel LEDs.

**Figure 3-1** *Front Panel LEDs*



<b>1</b>	DVD activity LED	<b>2</b>	Hard drive fault LED
<b>3</b>	Hard drive activity LED	<b>4</b>	Power supply fault LED
<b>5</b>	Memory fault LED	<b>6</b>	CPU fault LED
<b>7</b>	Network activity LED	<b>8</b>	System fault LED
<b>9</b>	Locator LED/Locator button	<b>10</b>	Power status LED/Power button

Table 3-1 describes the possible states and interpretations for the LEDs that are shown in Figure 3-1.

**Table 3-1** *Front Panel LEDs*

LED Name	State
DVD activity	<ul style="list-style-type: none"> <li>Off—The DVD drive is not in use.</li> <li>Green, blinking—The DVD drive is reading or writing data.</li> </ul>
Hard drive fault	<ul style="list-style-type: none"> <li>Off—The hard drive is operating properly.</li> <li>Amber—This hard drive has failed.</li> </ul>
Hard drive activity	<ul style="list-style-type: none"> <li>Off—There is no hard drive in the hard drive sled.</li> <li>Green—The hard drive is ready.</li> <li>Green, blinking—The hard drive is reading or writing data.</li> </ul>
Power supply fault	<ul style="list-style-type: none"> <li>Off—All power supplies are operating properly.</li> <li>Amber—At least one power supply has failed.</li> </ul>
Memory fault	<ul style="list-style-type: none"> <li>Off—All DIMMs are operating properly.</li> <li>Amber—At least one memory bank has a failed DIMM.</li> </ul>
CPU fault	<ul style="list-style-type: none"> <li>Off—All CPUs are operating properly.</li> <li>Amber—At least one CPU has failed.</li> </ul>
Network activity	<ul style="list-style-type: none"> <li>Off—The server is powered off or in standby power mode.</li> <li>Green, blinking—The server is communicating with the network in main power mode. The blink rate is faster as network activity increases.</li> </ul>

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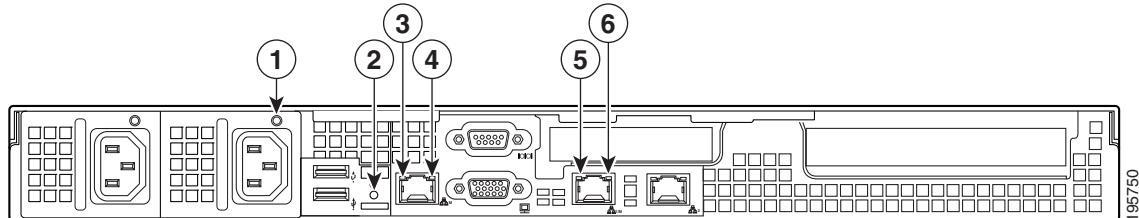
**Table 3-1** Front Panel LEDs (continued)

LED Name	State
System fault	<ul style="list-style-type: none"> <li>Green—The server is operating properly.</li> <li>Amber, blinking—An event that requires a service action has been detected. Investigate other LEDs and check logs to isolate the problem.</li> </ul>
Locator	<ul style="list-style-type: none"> <li>Off—The Locator LED is not in use.</li> <li>Blue, flashing—The Locator LED/button was pressed and the Locator LED flashes on the front and rear panels to help you find the server in a rack.</li> </ul>
Power status	<ul style="list-style-type: none"> <li>Off—No AC power is present.</li> <li>Green, blinking—The server is in standby power mode.</li> <li>Green—The server is in main power mode.</li> </ul> <p>See the “<a href="#">Connecting and Powering On the Server (Standalone Mode)</a>” section on page 2-8 for definitions of these power modes.</p>

## Rear Panel LEDs

Figure 3-2 shows the names and locations of the rear panel LEDs. A Generation M2 server is shown (the USB ports and the 10/100 Ethernet management port are in slightly different positions for Generation M1).

**Figure 3-2** Rear Panel LEDs



<b>1</b>	Power supply status LED	<b>2</b>	Rear Locator LED
<b>3</b>	10/100 Ethernet speed LED	<b>4</b>	10/100 Ethernet link status LED
<b>5</b>	10/100/1000 Gigabit Ethernet speed LED	<b>6</b>	10/100/1000 Gigabit Ethernet link status LED

Table 3-2 describes the possible states and interpretations for the LEDs that are shown in Figure 3-2.

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**Table 3-2 Rear Panel LEDs**

LED Name	State
Power supply status	<ul style="list-style-type: none"> <li>Off—No AC power is present in any power supplies.</li> <li>Green—This power supply is operating properly in main power mode.</li> <li>Green, blinking—This power supply is operating properly in standby power mode.</li> <li>Amber, flashing—There is no AC power present in this power supply.</li> <li>Amber and Green, blinking—This power supply has reached a Warning over-temperature condition: 176 °F (80 °C). The power supply auto-recovers from this condition when the temperature is within specification again: 167 °F (75 °C)</li> <li>Amber—This power supply has failed. This could be because the power supply has reached a Critical Shutdown over-temperature condition: 194 °F (90 °C). The power supply auto-recovers from this condition when the temperature is within specification again: 167 °F (75 °C).</li> </ul> <p>See the “<a href="#">Connecting and Powering On the Server (Standalone Mode)</a>” section on page 2-8 for definitions of these power modes.</p>
Locator	<ul style="list-style-type: none"> <li>Off—The Locator LED is not in use.</li> <li>Blue, flashing—The Locator LED button on the front panel was pressed and the Locator LED flashes on the front and rear panels to help you find the server in a rack.</li> </ul>



**Note**

The 10/100 Ethernet link status LED and the speed LED must be read in combination for the following interpretations.

10/100 Ethernet speed (left)	<ul style="list-style-type: none"> <li>Link status off + speed off—No link is present on this port.</li> </ul>
10/100 Ethernet link status (right)	<ul style="list-style-type: none"> <li>Link status off + speed solid green—A half-duplex, 10-Mbps link is present.</li> <li>Link status amber + speed solid green—A half-duplex, 100-Mbps link is present.</li> <li>Link status off + speed blinking green—A full-duplex, 10-Mbps link is present.</li> <li>Link status amber + speed blinking green—A full-duplex, 100-Mbps link is present.</li> </ul>

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**Table 3-2 Rear Panel LEDs (continued)**

LED Name	State
	<p> <b>Note</b> The 10/100/1000 Gigabit Ethernet link status LED and the speed LED must be read in combination for the following interpretations.</p>
10/100/1000 Gigabit Ethernet speed (left)	<ul style="list-style-type: none"> <li>Link status off + speed off—No link is present on this port.</li> <li>Link status off + speed solid green—A half-duplex, 10-Mbps link is present.</li> <li>Link status green + speed solid green—A half-duplex, 100-Mbps link is present.</li> <li>Link status amber + speed solid green—A half-duplex, 1000-Mbps link is present.</li> <li>Link status off + speed blinking green—A full-duplex, 10-Mbps link is present.</li> <li>Link status green + speed blinking green—A full-duplex, 100-Mbps link is present.</li> <li>Link status amber + speed blinking green—A full-duplex, 1000-Mbps link is present.</li> </ul>
10/100/1000 Gigabit Ethernet link status (right)	

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## Preparing for Component Installation

This section describes how to prepare the server for component installation and includes the following topics:

- Required Equipment, page 3-6
- Shutting Down and Powering Off the Server, page 3-6
- Removing and Replacing the Server in a Rack, page 3-7
- Replaceable Component Locations, page 3-9



**Warning**

**Only trained and qualified personnel must be allowed to install, replace, or service this equipment.**  
Statement 1030



**Warning**

**This unit might have more than one power cord. To reduce the risk of electric shock, disconnect the two power supply cords before servicing the unit.** Statement 14

## Required Equipment

The following items are used to perform the procedures in this chapter:

- Number 2 Phillips-head screwdriver
- Needle-nose pliers
- Electrostatic discharge (ESD) strap or other grounding equipment such as a grounded mat.

## Shutting Down and Powering Off the Server



**Tip**

If you have ordered a server with power supply redundancy (at least two power supplies), you do not have to power off the server to replace a power supply because they are redundant and hot-pluggable. The server hard drives are also hot-pluggable.

The server can run in two power modes:

- Main power mode—Power is supplied to all server components and any operating system on your hard drives can run.
- Standby power mode—Power is supplied only to the service processor and the cooling fans and it is safe to power off the server from this mode.

You can invoke a graceful shutdown or an emergency shutdown (hard shutdown) by using either of the following methods:

- Use the CIMC management interface. See either the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*.
- Use the **Power** button on the server front panel. To use the **Power** button, follow these steps:

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- 
- Step 1** Check the color of the Power Status LED (see the “Front Panel LEDs” section on page 3-2).
- Green indicates that the server is in main power mode and must be shut down before it can be safely powered off. Go to **Step 2**.
  - Amber indicates that the server is already in standby mode and can be safely powered off. Go to **Step 3**.

- Step 2** Invoke either a graceful shutdown or a hard shutdown:



**Caution** To avoid data loss or damage to your operating system, you should always invoke a graceful shutdown of the operating system.

---

- Graceful shutdown—Press and release the **Power** button. The operating system will perform a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power Status LED.
- Emergency shutdown—Press and hold the **Power** button for 4 seconds to force the main power off and immediately enter standby mode.

- Step 3** Disconnect the power cords from the power supplies in your server to completely power off the server.
- 

## Removing and Replacing the Server in a Rack

To remove or replace the server in a rack, follow these steps:



**Tip** You do not have to remove the server from the rack if you can slide it forward enough to remove the top cover and safely view and access the internal components. Always disconnect all power cords before removing the top cover.

---

- Step 1** Remove a server from a rack:

- Disconnect all cables from the server. You can leave the cables routed through the CMA.
- Loosen the two captive thumbscrews that secure the front of the server to each rack post.
- Pull the server out of the front of the rack until the slide rails stop against the internal lock.
- Press the removal release clip on each slide rail (see [Figure 2-3 on page 2-6](#)), and then continue pulling the server out evenly until it clears the slide rails.

- Step 2** Replace a server in a rack:

- Align the mounting brackets that are attached to the server sides with the front of the empty slide rails.
  - Push the server into the slide rails until they stop against the internal stops.
  - Press the installation release clip on each slide rail (see [Figure 2-3 on page 2-6](#)), and then continue pushing the server in evenly until its front flanges touch the rack posts.
  - Tighten the thumbscrews on each flange to secure the server to the rack posts.
-

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## Removing and Replacing the Server Top Cover

To remove or replace the server top cover, follow these steps:



**Warning**

**This unit might have more than one power cord. To reduce the risk of electric shock, disconnect the two power supply cords before servicing the unit.** Statement 14



**Tip**

You do not have to remove the cover to replace hard drives or power supplies.

**Step 1**

Remove the top cover:

- a. Use a Number 2 Phillips head screwdriver to remove the two screws that secure the top cover (Generation M1 only).



**Note**

The UCS C200 Generation M2 server does not have cover screws.

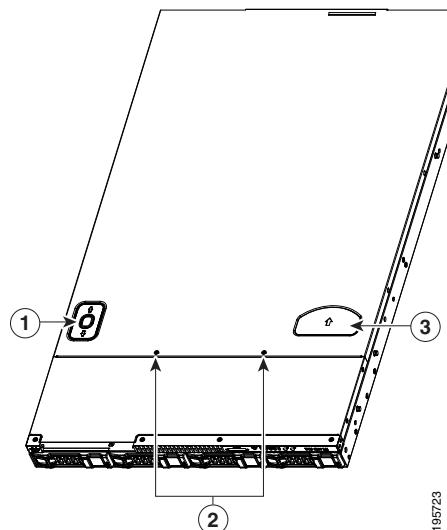
- b. Press down on the release button and use the nonslip pad to push the cover toward the rear about one inch, until you feel it stop sliding.
- c. Lift the cover from the server and set it aside.

**Step 2**

Replace the top cover:

- a. Set the cover in place about one inch back from the fully closed position. Use the three alignment pegs on each inside edge of the cover to align with the alignment notches on the chassis.
- b. Push the cover toward the server front until the release button clicks.
- c. Replace the two screws that secure the cover in place (Generation M1 only).

**Figure 3-3 Removing the Top Cover of the Server**



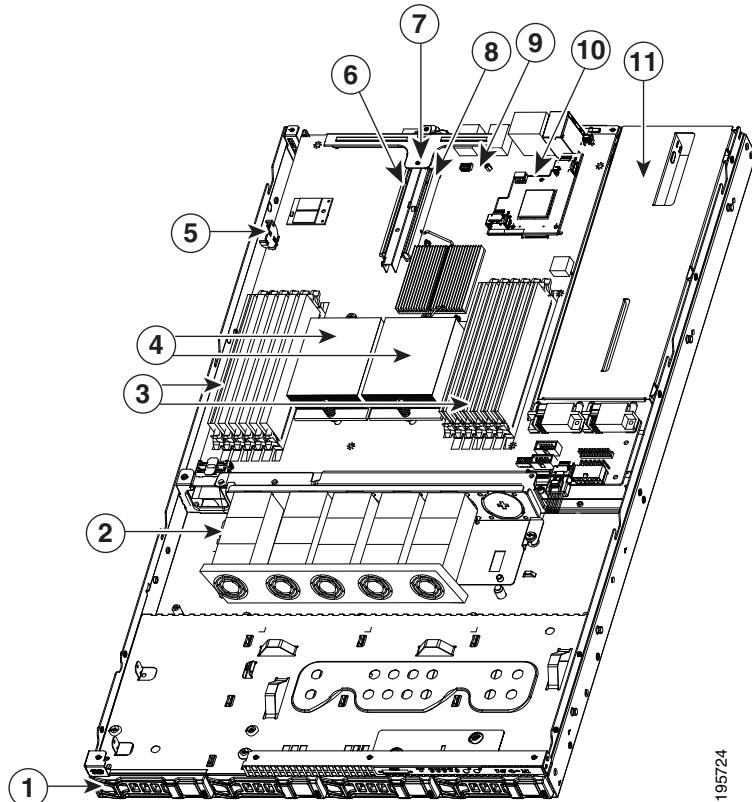
1	Release button	2	Securing screws (Generation M1 only)
3	Nonslip pad		

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## Replaceable Component Locations

This section shows the locations of the components that are discussed in this chapter. The view in [Figure 3-4](#) is from the top down, with the top cover, internal cable cover, and internal air baffles removed.

**Figure 3-4 Replaceable Component Locations (Top View)**



195724

<b>1</b>	Hard drives (up to four, accessible through front bays)	<b>2</b>	Fan tray
<b>3</b>	DIMM slots (up to 12)	<b>4</b>	CPUs and heatsinks (up to two)
<b>5</b>	Motherboard CMOS battery	<b>6</b>	PCIe card connector on riser card (with standard-profile slot)
<b>7</b>	Riser card assembly	<b>8</b>	PCIe card connector on riser card (with low-profile slot)
<b>9</b>	Socket for trusted platform module (TPM)	<b>10</b>	Socket for LSI 1064-based mezzanine card
<b>11</b>	Power supplies (up to two, accessible through rear bays)		

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# Installing or Replacing Components



## Warning

**This unit might have more than one power cord. To reduce the risk of electric shock, disconnect the two power supply cords before servicing the unit.**

Statement 14



## Warning

**Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.**

Statement 1029



## Warning

**Class 1 laser product.**

Statement 1008



## Caution

When handling server components, wear an ESD strap to avoid damage.



## Tip

You can press the Locator button on the front panel to turn on a flashing Locator LED on the server front and rear panels. This button helps you to locate the specific server that you are servicing when you go to the rear of the rack. See the “[Status LEDs](#)” section on page 3-1 for locations of the LEDs.

This section describes how to remove and replace server components. This section includes the following topics:

- [Installing Hard Drives, page 3-11](#)
- [Installing Power Supplies, page 3-12](#)
- [Installing a Fan Tray, page 3-13](#)
- [Installing DIMMs, page 3-15](#)
- [Installing CPUs and Heatsinks, page 3-19](#)
- [Installing a Motherboard CMOS Battery, page 3-21](#)
- [Installing a Trusted Platform Module, page 3-22](#)
- [Replacing a PCIe Riser Card Assembly, page 3-24](#)
- [Replacing a PCIe Card \(Network Adapters\), page 3-25](#)
- [Replacing a PCIe Card \(Mass Storage Controllers\), page 3-28](#)
- [Installing a Mezzanine Card, page 3-33](#)

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## Installing Hard Drives

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)



**Tip**

You can mix SAS and SATA drives in the same server.



**Tip**

You do not have to shut down or power off the server to replace hard drives because they are hot pluggable.



**Note**

If you need to make changes to your RAID configuration after installing a hard drive, use the LSI configuration utility for your mass storage device. See [RAID Controller Considerations, page C-1](#) for more information.



**Note**

If your server uses an LSI MegaRAID card for mass storage control, you might hear beeps coming from the card when you make changes to the drive array. See the [“LSI MegaRAID Card Beep Codes” section on page 3-32](#) for more information.

To replace or install a hot-pluggable hard drive, follow these steps:

**Step 1**

Remove the hard drive that you are replacing or remove a blank panel from an empty bay (see [Figure 3-5](#)):

- a. Press the release button to expose the ejector lever.
- b. Pull the ejector lever toward you, and then pull the hard drive sled from the drive bay.
- c. If you are replacing an existing hard drive, remove the hard drive from the sled by removing the four screws from the bottom of the sled.

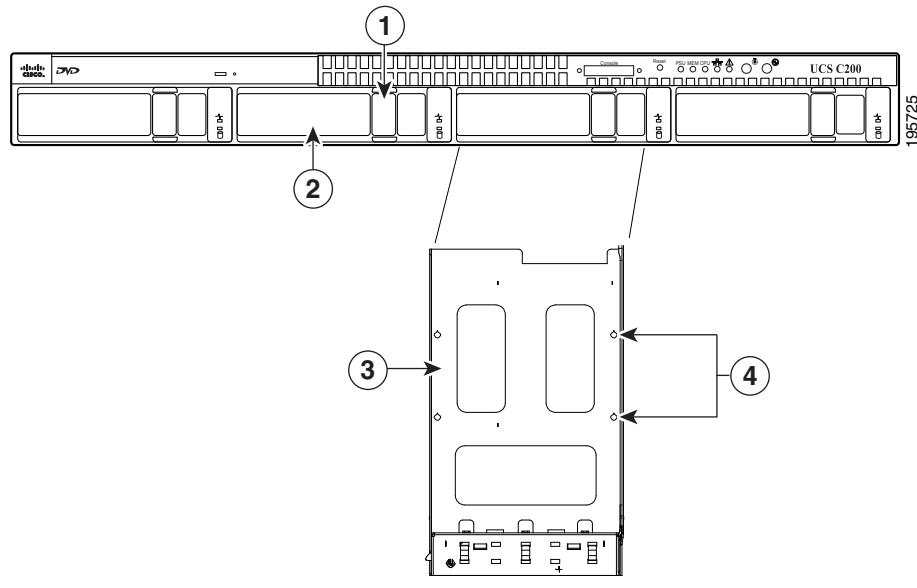
**Step 2**

Install a new hard drive:

- a. Place the hard drive in the sled with the connectors facing the rear.
- b. Install the four securing screws on the bottom of the sled.
- c. With the ejector lever still open, push the sled into the drive bay until you feel the drive stop against the backplane.
- d. Press the ejector lever flat until the lock clicks into place.

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**Figure 3-5 Removing and Replacing Hard Drives**



<b>1</b>	Release button	<b>2</b>	Ejector lever
<b>3</b>	Hard drive sled, bottom view	<b>4</b>	Securing screws (four)

## Installing Power Supplies

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To replace or install a power supply, follow these steps:



**Note**

If you have ordered a server with power supply redundancy (at least two power supplies), you do not have to power off the server to replace a power supply because they are hot pluggable.

**Step 1** Remove a power supply or a blanking panel from an empty bay:

- Do one of the following actions:
  - If your server has only one power supply, shut down and power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on page 3-6.
  - If your server has two power supplies, the power supplies are hot pluggable so you do not have to shut down the server.
- Remove the power cord from the power supply that you are replacing.
- Push the release lever toward the center of the power supply or blanking panel and pull on the handle to disengage the supply from the backplane (see [Figure 3-6](#)).

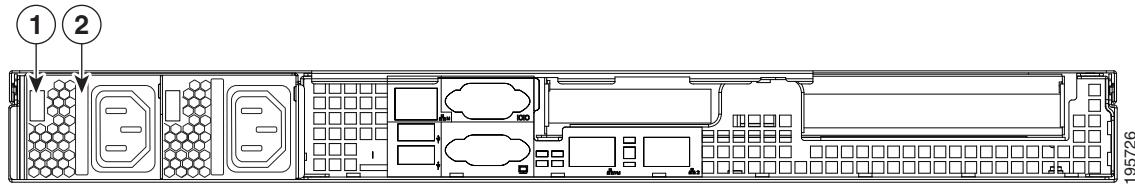
**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

- d. Remove the power supply from the bay.

**Step 2** Install a new power supply:

- a. Insert the new power supply into the bay and push it inward until the release lever clicks and locks.
- b. Replace the power cord to the new power supply.
- c. Press the **Power** button to return the server to main power mode.

**Figure 3-6** *Removing and Replacing a Power Supply*



**1** Release lever

**2** Power supply handle

## Installing a Fan Tray

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To replace a fan tray, follow these steps:

**Step 1** Remove a fan tray:

- a. Power off the server as described in the “Shutting Down and Powering Off the Server” section on page 3-6.
- b. Disconnect all power cords from the power supplies.
- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- d. Remove the top cover as described in the “Removing and Replacing the Server Top Cover” section on page 3-8.
- e. Remove the cable cover that sits over the fan tray and set it aside.



**Note** If your server has an optional LSI battery-backup unit (BBU) mounted to the fan tray, you must remove the BBU. Remove the three screws that secure the BBU to the bracket on the fan tray and set the BBU aside. See the “Special Installation Instructions For the LSI MegaRAID Battery Backup Unit” section on page 3-30 for more information.

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- f. Remove the three screws that hold the battery unit bracket to the fan tray and then remove the battery unit bracket to provide clearance to the cable harness (see [Figure 3-7](#)).
- g. Remove the cable harness from the fan tray connector.
- h. Remove the two screws that secure the fan tray to the chassis posts and lift the tray out of the chassis.

**Step 2** Install a fan tray:

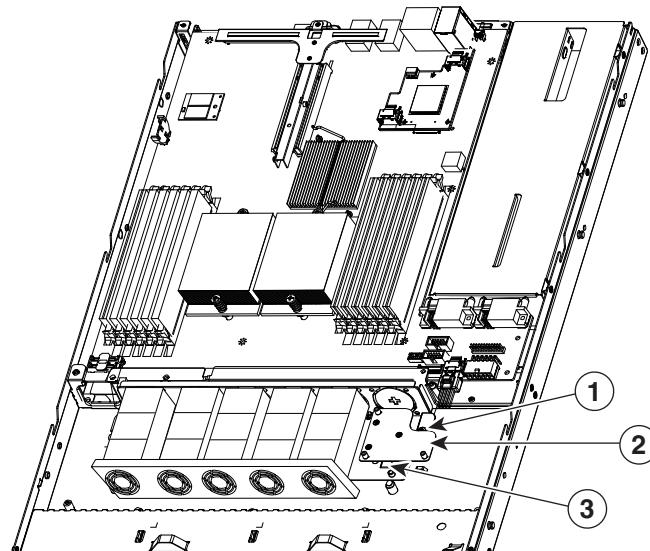
- a. Place the new fan tray into the chassis, aligning the two bracket holes on the fan tray with the chassis posts.
- b. Replace the two screws that secure the tray to the chassis posts.
- c. Replace the cable harness to fan tray connector.
- d. Replace the battery unit bracket and the three screws that secure it to the fan tray.



**Note** If you removed an optional LSI BBU from the fan tray, replace it and the three screws that secure it to the fan tray.

- e. Replace the cable cover and the top cover.
- f. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

**Figure 3-7** *Removing and Replacing a Fan Tray*



<b>1</b>	Securing screw (one on each end)	<b>2</b>	Fan tray with battery unit bracket
<b>3</b>	Fan tray connector		

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## Installing DIMMs

This section includes the following sections:

- [Memory Performance Guidelines and Population Rules, page 3-15](#)
- [DIMM Installation Procedure, page 3-17](#)



**Note**

To ensure the best server performance, it is important that you are familiar with memory performance guidelines and population rules before you install or replace memory modules.

## Memory Performance Guidelines and Population Rules

This section describes the type of memory that the server requires and its effect on performance. The following topics are covered:

- [Supported DIMMs, page 3-15](#)
- [Banks and Channels, page 3-15](#)
- [Memory Population Rules, page 3-17](#)
- [Memory Mirroring and RAS, page 3-17](#)

### Supported DIMMs

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)



**Note**

Non-ECC UDIMMs do not support temperature sensors.

### Banks and Channels

Each Channel is identified by a letter—A, B, C for one CPU, and D, E, F for the other CPU. Each bank is identified by a numbers, either 1 or 2. For example DIMM slots A1, B1, and C1 belong to Bank-1, while A2, B2, C2 belong to Bank-2. Note that each slot within Bank 1 is blue, while each slot within Bank 2 is black.

[Figure 3-8](#) shows how banks and channels are physically laid out on the motherboard. The DIMM slots on the right (channels A, B, and C) are associated with CPU1, while the DIMM slots on the left (channels D, E, and F) are associated with CPU2.

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**Figure 3-8 Physical Representation of Banks and Channels**

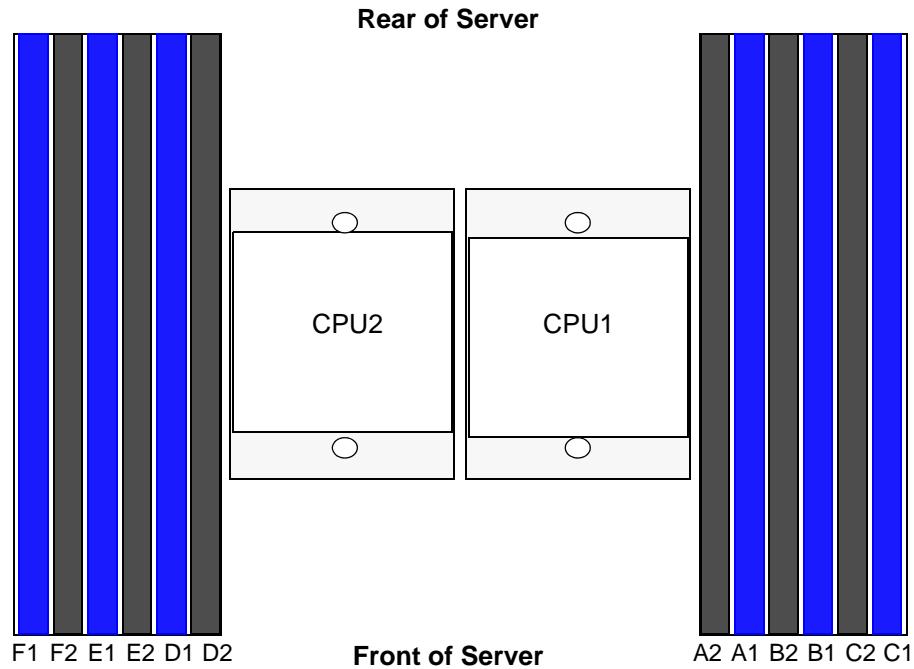
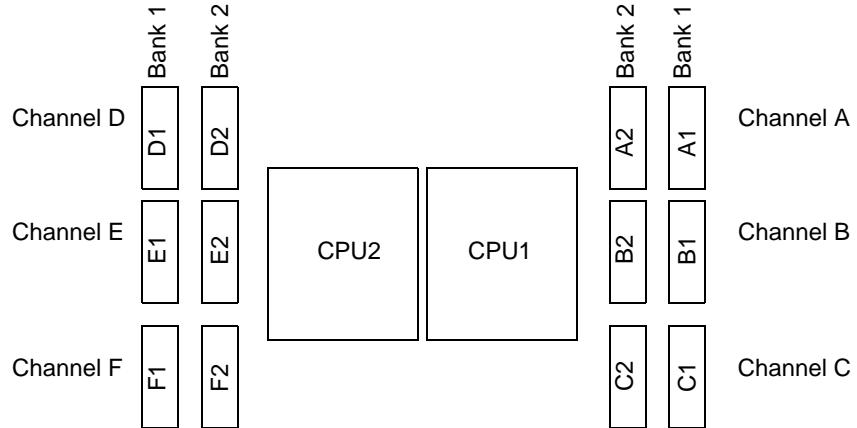


Figure 3-9 shows a logical representation of the channels and banks associated with each CPU.

**Figure 3-9 Logical Representation of Channels and Banks**



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## Memory Population Rules

When considering the memory configuration of your server, you should consider the following items:

- DIMMs within the server should all be the same type, speed, and size. Do not mix different size DIMMs or DIMMs with different clock rates in the same server. Doing so causes the system to set the memory system speed to that of the slowest installed DIMMs.
- DIMMs can be used either in a one DIMM per Channel (1DPC) configuration or in a two DIMMs per Channel (2DPC) configuration.
- There are blue and black DIMM slots. Populate blue slots in a bank first.

## Memory Mirroring and RAS

- The CPUs support memory mirroring only when Channels A and B on CPU 1 are populated with DIMMs that are identical in configuration, size, and speed. Do not populate channel C. If three channels are populated with DIMMs, memory mirroring is automatically disabled.
- If DIMMs on CPU 2 are populated, channels D and E must be populated with DIMMs that are identical in configuration, size, and speed. Do not populate channel F. If three channels are populated with DIMMs, memory mirroring is automatically disabled.
- If memory mirroring is used, the DRAM size is reduced by 50 percent for reasons of reliability. Memory sparing is not supported.

## DIMM Installation Procedure

To install or replace a DIMM, follow these steps:



Refer to the DIMM population rules before removing or installing DIMMs. See the “[Memory Performance Guidelines and Population Rules](#)” section on page 3-15.

### Step 1

Remove an existing DIMM:

- Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on page 3-6.
- Disconnect all power cords from the power supplies.
- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

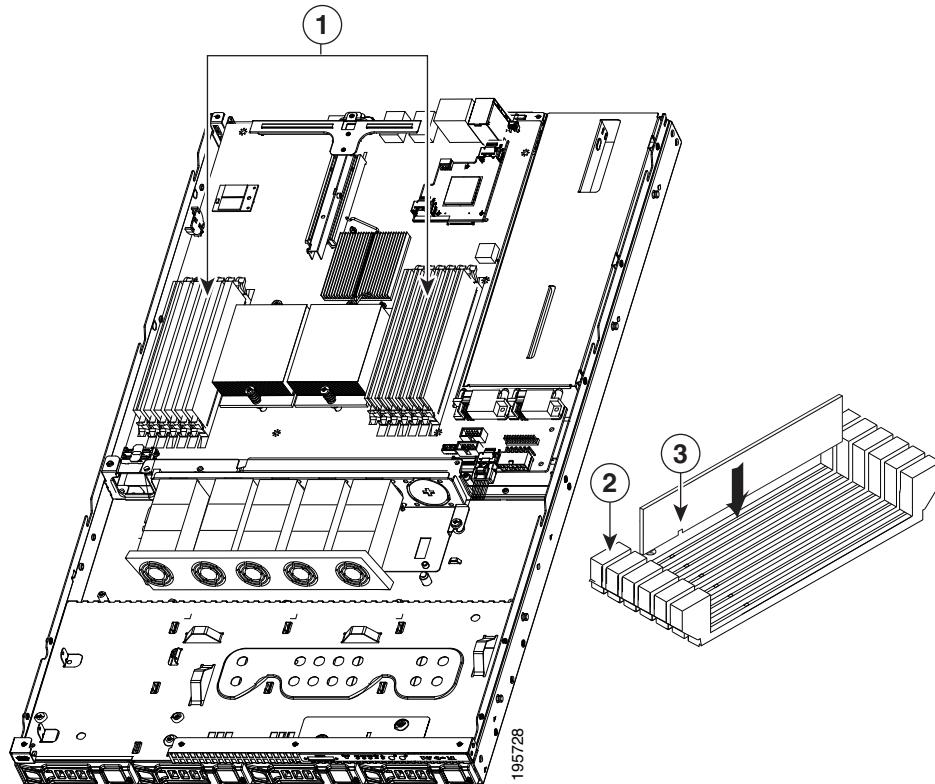
- Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on page 3-8.
- Remove the air baffle that sits over the CPUs and DIMMs and set it aside.
- Push down on the ejector levers at both ends of the DIMM slot.
- Grasp the DIMM by its top corners and remove it from the server. Place the DIMM on an antistatic mat or in antistatic packaging.

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**Step 2** Install a DIMM:

- a. With the ejector levers at both ends of the DIMM slot fully open, orient the DIMM's alignment notch with the alignment key in the DIMM slot.
- b. Press down on both top corners of the DIMM simultaneously until the ejector levers click and lock in place on the DIMM.
- c. Replace the air baffle and the top cover.
- d. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

**Figure 3-10** *Removing and Replacing Memory Modules*



<b>1</b>	DIMM slots (twelve)	<b>2</b>	DIMM slot ejector lever (two on each slot)
<b>3</b>	Alignment key in DIMM slot		

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## Installing CPUs and Heatsinks

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To install or replace a CPU and heatsink, follow these steps:

---

**Step 1** Remove an existing CPU and heatsink:

- a. Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- b. Disconnect all power cords from the power supplies.
- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

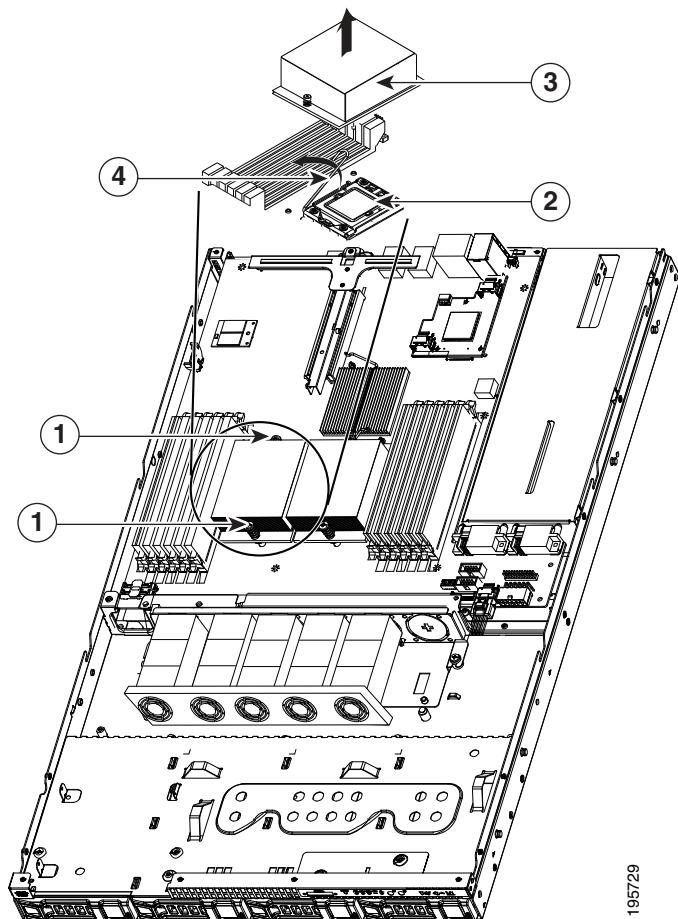
- d. Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- e. Remove the air baffle that sits over the CPUs and DIMMs and set it aside.
- f. Loosen the two captive screws that hold the heatsink to the chassis posts and lift the heatsink out of the server (see [Figure 3-11](#)).
- g. If you plan to use this heatsink with your new CPU, clean all of the old thermal compound from the bottom of the heatsink.
- h. Unhook the CPU socket latch and open the CPU cover plate.
- i. Lift the CPU out of the socket and set it aside on an antistatic mat or in an antistatic bag.

**Step 2** Install a CPU and heatsink:

- a. Set the new CPU into the socket, being careful to orient the CPU alignment notches with the alignment keys in the socket.
- b. Close the CPU cover plate and hook the socket latch back in the locked position.
- c. Prepare the thermal compound, which aids heat transference between the CPU and the heatsink:
  - If you are installing a new heatsink, a thermal pad comes pre-applied on the heatsink. Remove the protective film to expose the thermal pad. Do not use the syringe of thermal compound that is shipped with a replacement CPU in this case.
  - If you are using your existing heatsink, make sure that all of the old thermal compound is removed from the underside of the heatsink. Then apply the full contents of the syringe that is supplied with the new CPU to apply thermal compound to the top of the CPU. Apply the compound as evenly as possible so that it forms an even layer when the heatsink is tightened down.
- d. Align the heatsink captive screws with the chassis posts, and then tighten both captive screws evenly.
- e. Replace the air baffle and the top cover.
- f. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

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**Figure 3-11 Removing and Replacing CPUs and Heatsinks**



<b>1</b>	Captive heatsink screws (two per CPU)	<b>2</b>	CPU cover plate
<b>3</b>	CPU socket alignment keys	<b>4</b>	CPU socket latch

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## Installing a Motherboard CMOS Battery

**Warning**

**There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.** (Statement 1015)

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To install or replace a CMOS battery on the motherboard, follow these steps:

---

**Step 1**

Remove a motherboard CMOS battery:

- a. Power off the server as described in the “Shutting Down and Powering Off the Server” section on [page 3-6](#).
- b. Disconnect all power cords from the power supplies.
- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

If you cannot safely view and access the component, remove the server from the rack.

- d. Remove the top cover as described in the “Removing and Replacing the Server Top Cover” section on [page 3-8](#).
- e. Press the battery socket retaining clip toward the chassis wall (see [Figure 3-12](#)).
- f. Lift the battery from the socket. Use needle-nose pliers to grasp the battery if there is not enough clearance for your fingers.

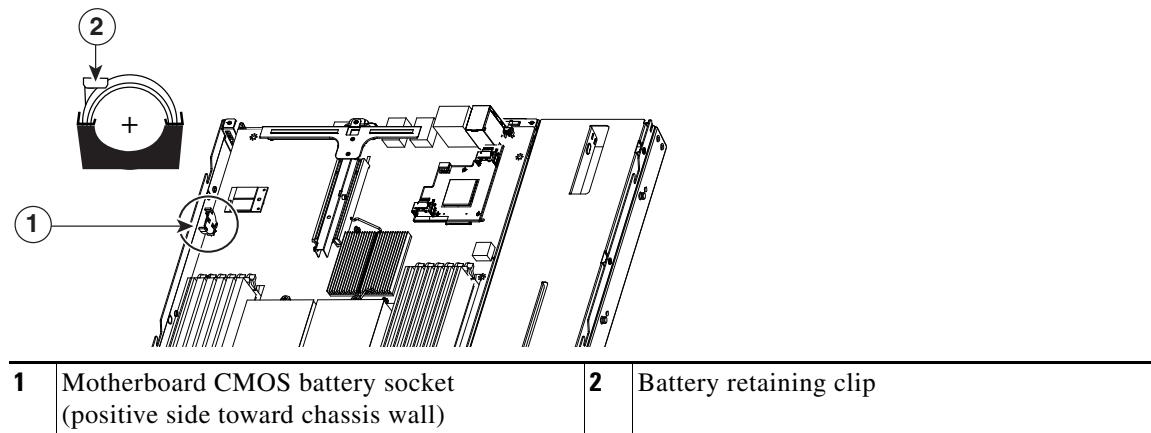
**Step 2**

Install a motherboard CMOS battery:

- a. Press the battery socket retaining clip toward the chassis wall.
- b. Insert the new battery into the socket with the battery’s positive (+) marking toward the chassis wall. Ensure that the retaining clip clicks over the top of the battery.
- c. Replace the top cover.
- d. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

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**Figure 3-12 Removing and Replacing a Motherboard CMOS Battery**



## Installing a Trusted Platform Module

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To install or replace a trusted platform module (TPM), follow these steps:

**Step 1** Remove a TPM:

- Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- Disconnect all power cords from the power supplies.
- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- Remove the PCIe riser card assembly to provide clearance to the TPM. See the “[Replacing a PCIe Riser Card Assembly](#)” section on [page 3-24](#) for instructions.
- Remove the securing screw that holds the TPM to the motherboard standoff (see [Figure 3-13](#)).
- Lift up on both ends of the TPM to free it from the socket on the motherboard.

**Step 2** Install a TPM:

- Align the connector that is on the underside of the new TPM with motherboard socket JP2, and then press firmly on both ends of the TPM to press the connector into the socket.
- Replace the securing screw that holds the TPM to the motherboard standoff.
- Replace the PCIe riser card assembly.

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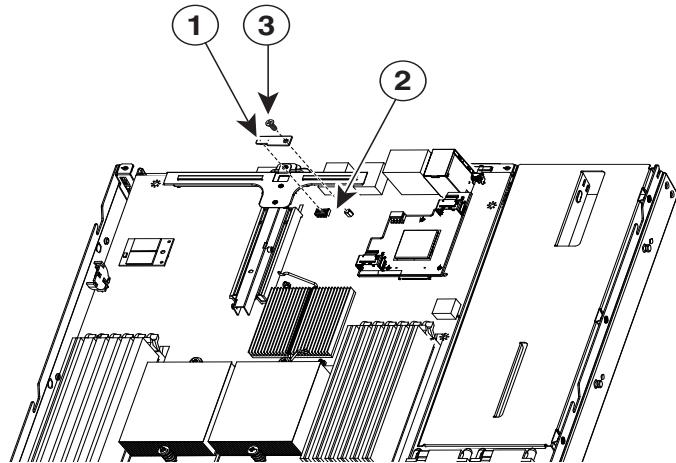
See the “Replacing a PCIe Riser Card Assembly” section on page 3-24 for instructions.

- d. Replace the top cover.
- e. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button. See the following note.



**Note** The TPM must be activated in the BIOS before you can use it. If you have not already activated the TPM in the BIOS, proceed with the following step.

**Figure 3-13** *Removing and Replacing a TPM*



<b>1</b>	TPM	<b>2</b>	JP2 socket on motherboard
<b>3</b>	Securing screw		

**Step 3** Activate the TPM in the server BIOS:

- a. Either attach a VGA monitor and USB keyboard to the server, or log in remotely to the CIMC interface of the server and open a virtual KVM console window. For instructions on using the CIMC, refer to the *Cisco UCS C-Series Rack-Mount Server Configuration Guide*.
- b. Reboot the server.



**Note** You can reboot the server by pressing the Power button on the server; by selecting Macros > Ctrl-Alt-Del on the Cisco KVM Console window menu bar; or by selecting Power Cycle Server on the Server Summary tab of the CIMC GUI.

- c. Watch during bootup for the F2 prompt, and then press **F2** to enter BIOS setup.
- d. If you have already configured a BIOS Administrator password, enter it and skip to Step h.
- e. If you have not set a BIOS Administrator password for the server, continue with this step.

On the BIOS utility screen, select the **Security** tab, then select **Set Administrator Password**. Use the pop-up boxes to set the BIOS administrator password, then press **F10** to save your settings and reboot the server.

- f. Watch during bootup for the F2 prompt, and then press **F2** to enter BIOS setup.
- g. Log into the BIOS Setup utility with your BIOS Administrator password.
- h. On the BIOS utility screen, select the **Security** tab.

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- i. Scroll down to **TPM** and select **TURN ON**.
  - j. Press **F10** to save your settings and reboot the server.
  - k. Watch during bootup for the **F2** prompt, and then press **F2** to enter BIOS setup.
  - l. Log into the BIOS Setup utility with your BIOS Administrator password.
  - m. Verify that the TPM is now enabled. Select the **Security** tab. Verify that the TPM entry now says **Enabled**.
- 

## Replacing a PCIe Riser Card Assembly

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To replace a PCIe riser card assembly, follow these steps:

---

**Step 1** Remove a PCIe riser card:

- a. Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- b. Disconnect all power cords from the power supplies.
- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

---

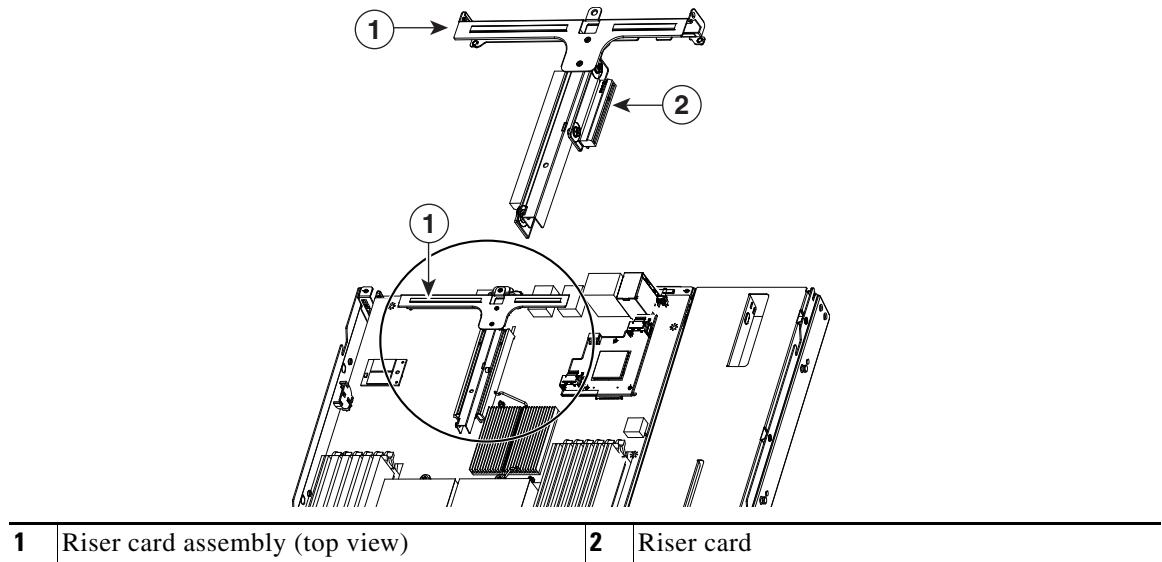
- d. Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- e. Remove the screw that holds the riser card assembly to the rear of the chassis (see [Figure 3-14](#)).
- f. Lift the assembly and any attached PCIe cards straight up and out of the chassis. Lift up on both ends of the bracket evenly to avoid damaging the sockets or the riser cards.
- g. Remove any PCIe card from the riser card assembly and set it aside.

**Step 2** Install a PCIe riser card:

- a. Replace any PCIe card in the new riser card assembly.
- b. Set the assembly in place, aligning the riser cards with the PCIe slots on the motherboard.
- c. Press down evenly on both ends of the assembly to fully engage the riser cards with the PCIe slots on the motherboard.
- d. Replace the screw that secures the assembly to the chassis.
- e. Replace the top cover.
- f. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

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**Figure 3-14** *Removing and Replacing a PCIe Riser Card Assembly*



## Replacing a PCIe Card (Network Adapters)



**Note** For mass storage controller PCIe cards, see the “Replacing a PCIe Card (Mass Storage Controllers)” section on page 3-28.



**Note** If you are installing a Cisco UCS P81E Virtual Interface Card (N2XX-ACPCI01), there are prerequisites considerations. See [Special Considerations for the Cisco UCS P81E Virtual Interface Card \(N2XX-ACPCI01\)](#), page 3-27.



**Note** If you are using the server in UCSM mode, only certain combinations of network adapter cards are qualified for support. See [Supported Network Adapter Card Combinations for UCSM Mode](#), page D-10.

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

Installing a PCIe card requires that you first remove the riser card assembly from the chassis. To install or replace a PCIe card, follow these steps:

**Step 1** Remove a PCIe card:

- Power off the server as described in the “Shutting Down and Powering Off the Server” section on page 3-6.

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- b. Disconnect all power cords from the power supplies.
- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- d. Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- e. Remove the screw that holds the riser card assembly to the rear of the chassis. See [Figure 3-14 on page 3-25](#).
- f. Lift the assembly and any attached PCIe cards straight up and out of the chassis. Lift up on both ends of the assembly evenly to avoid damaging the sockets or the riser cards.
- g. Remove the screw that secures the PCIe cards rear plate to the assembly rear slot (see [Figure 3-16](#)).
- h. Pull the PCIe card connector out of the riser card socket and set the card aside.

**Step 2** Install a PCIe card:

- a. If you are installing a PCIe card to an empty slot on the riser card assembly, remove any blank panel from the assembly rear slot by removing the screw that secures the blank panel. Set the screw aside.



**Note** A standard-profile PCIe card must be installed on the right side of the assembly, as viewed from the rear of the server. A low-profile PCIe card can be installed in either the low-profile slots on the left, or the standard-profile slots on the right if a standard-profile I/O bracket is used on the card.

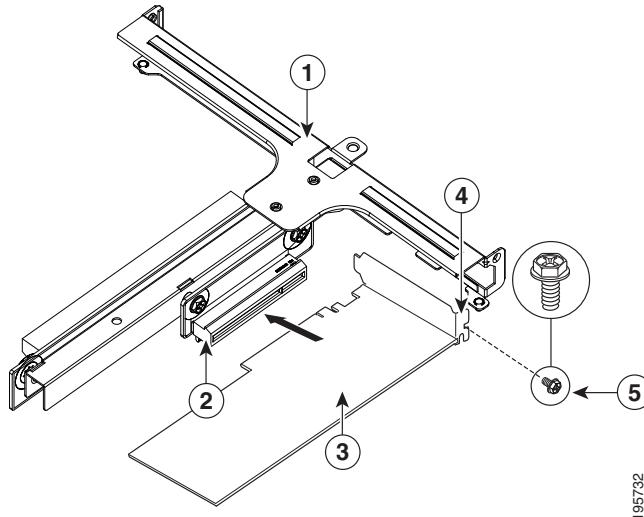
- b. Align the PCIe card connector with the riser card socket and push on both ends of the card evenly to fully engage the connector with the riser card socket.
- c. Install the screw that secures the rear plate of the card to the assembly rear slot.
- d. Set the assembly in place, aligning the riser cards with the PCIe slots on the motherboard.
- e. Press down evenly on both ends of the assembly to fully engage the riser cards with the PCIe slots on the motherboard.
- f. Replace the screw that secures the riser card assembly to the chassis.
- g. Replace the top cover.
- h. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

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**Figure 3-15 PCIe Slot Numbering and Physical Orientation, Facing Server Rear**

PCIe Slot 1	PCIe Slot 2
-------------	-------------

**Figure 3-16 Removing and Replacing a PCIe Card**



<b>1</b>	Riser card assembly removed from chassis	<b>2</b>	Riser card
<b>3</b>	Low-profile PCIe card	<b>4</b>	PCIe card rear plate
<b>5</b>	PCIe card securing screw		

## Special Considerations for the Cisco UCS P81E Virtual Interface Card (N2XX-ACPCI01)

The Cisco UCS P81E Virtual Interface Card is a standard-profile, half-length, dual-port 10 Gb PCIe card with SFP+. See the following special considerations and prerequisites:

- This card is supported in server Generations M1 and M2.
- This server supports installation of one of these cards.
- This card is supported only in PCIe slot 2 of this server.



**Note** This card must be installed in PCIe slot 2 to use the Cisco Card NIC mode (see [Figure 3-15 on page 3-27](#)). See also [NIC Modes and NIC Redundancy Settings, page 2-12](#).

- This card requires that the server has CIMC firmware version 1.2(1) or later installed. There is a heartbeat LED on the top and bottom of the card that indicates when firmware is active.
- This card requires that you have the new power supply model R2X0-PSU2-650W-SB. A 5A standby mode has been added to these power supplies to support this card. See [How to Identify Which Power Supply Model is in Your Server, page 3-28](#).
- Both power supplies must be model R2X0-PSU2-650W-SB. Do not mix power supply models in the same server.

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## How to Identify Which Power Supply Model is in Your Server

There are two methods that you can use to identify which power supply is installed in your server:

1. Visually inspect the power supply at the rear of the server. The new power supply model R2X0-PSU2-650W-SB has a sticker with the number 650W-SB; the old power supply has no sticker.
2. Use the Cisco Integrated Management Controller (CIMC) GUI to view the power supply model:
  - a. Use a browser to connect to CIMC using the CIMC IP address.
  - b. Log in to CIMC using your administrator user name and password.
  - c. On the **CIMC Server** tab, click **Inventory**.
  - d. On the **Inventory** pane, click the **Power Supplies** tab.
  - e. View the power supply model number in the **Product ID** column. The new power supply is listed by the manufacturer's model number, R2X0-PSU2-650W-SB.

## Replacing a PCIe Card (Mass Storage Controllers)

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

In addition to the hardware replacement procedure, this section contains the following topics:

- [Special Installation Instructions For the LSI MegaRAID Battery Backup Unit, page 3-30](#)
- [Identifying Which Cards Are Installed in Your Server, page 3-32](#)
- [LSI MegaRAID Card Beep Codes, page 3-32](#)



**Note** For network adapter PCIe cards, see the “Replacing a PCIe Card (Network Adapters)” section on [page 3-25](#).



**Note** If you do not know which cards are installed in your server, see the “[Identifying Which Cards Are Installed in Your Server](#)” section on [page 3-32](#).



**Note** LSI MegaRAID SAS controller cards are enabled with beep codes that can indicate activity within the RAID array. See the “[LSI MegaRAID Card Beep Codes](#)” section on [page 3-32](#) for more information.

Installing a PCIe card requires that you first remove the riser card assembly from the chassis. To install or replace a PCIe card, follow these steps:

### Step 1 Remove a PCIe card:

- a. Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- b. Disconnect all power cords from the power supplies.

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- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

- d. Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- e. Remove the screw that holds the riser card assembly to the rear of the chassis. See [Figure 3-14](#) on [page 3-25](#).
- f. Lift the assembly and any attached PCIe cards straight up and out of the chassis. Lift up on both ends of the assembly evenly to avoid damaging the sockets or the riser cards.
- g. Remove the screw that secures the PCIe card rear plate to the assembly rear slot (see [Figure 3-16](#)).
- h. Disconnect any cables from the card.
- i. Pull the PCIe card connector out of the riser card socket and set the card aside.

**Step 2** Install a PCIe card:

- a. If you are installing a PCIe card to an empty slot on the riser card assembly, remove any blank panel from the assembly rear slot by removing the screw that secures the blank panel. Set the screw aside.



**Note** A standard-profile PCIe card must be installed on the right side of the assembly, as viewed from the rear of the server. A low-profile PCIe card can be installed in either the low-profile slots on the left, or the standard-profile slots on the right if a standard-profile I/O bracket is used on the card.

- b. Align the PCIe card connector with the riser card socket and push on both ends of the card evenly to fully engage the connector with the riser card socket.
- c. Install the screw that secures the rear plate of the card to the assembly rear slot.
- d. Connect any cables to the card. Refer to the LSI documentation for the card for instructions.

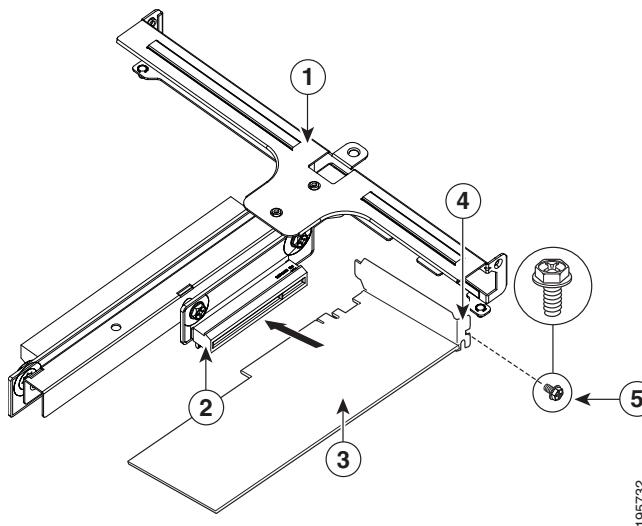
**Caution**

If you are installing the optional battery backup unit (BBU), this server requires that you install the BBU differently than the LSI instructions to avoid overheating the card. See the “[Special Installation Instructions For the LSI MegaRAID Battery Backup Unit](#)” section on [page 3-30](#).

- e. Set the assembly in place, aligning the riser cards with the PCIe slots on the motherboard.
- f. Press down evenly on both ends of the assembly to fully engage the riser cards with the PCIe slots on the motherboard.
- g. Replace the screw that secures the riser card assembly to the chassis.
- h. Replace the top cover.
- i. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

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**Figure 3-17 Removing and Replacing a PCIe Card**



<b>1</b>	Riser card assembly removed from chassis (top view)	<b>2</b>	Riser card
<b>3</b>	Low-profile PCIe card (installed to side of riser card bracket with low-profile rear slot)	<b>4</b>	PCIe card rear plate
<b>5</b>	PCIe card securing screw		

## Special Installation Instructions For the LSI MegaRAID Battery Backup Unit

When you install an LSI MegaRAID card and the optional BBU in this server, do not install the BBU on top of the card as described in the LSI instructions. To avoid overheating the card, you must install the BBU on a special bracket that is located on the fan tray.



**Warning**

**There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

Statement 1015

To install or replace an LSI BBU, follow these steps:

**Step 1** Remove an LSI BBU:

- Remove the three screws that secure the BBU to the BBU bracket on the fan tray (see Figure 3-18).
- Disconnect the cable from the BBU. If you are only replacing a BBU and not the LSI card, you do not have to disconnect the other end of the cable from the card.

**Step 2** Install a BBU:

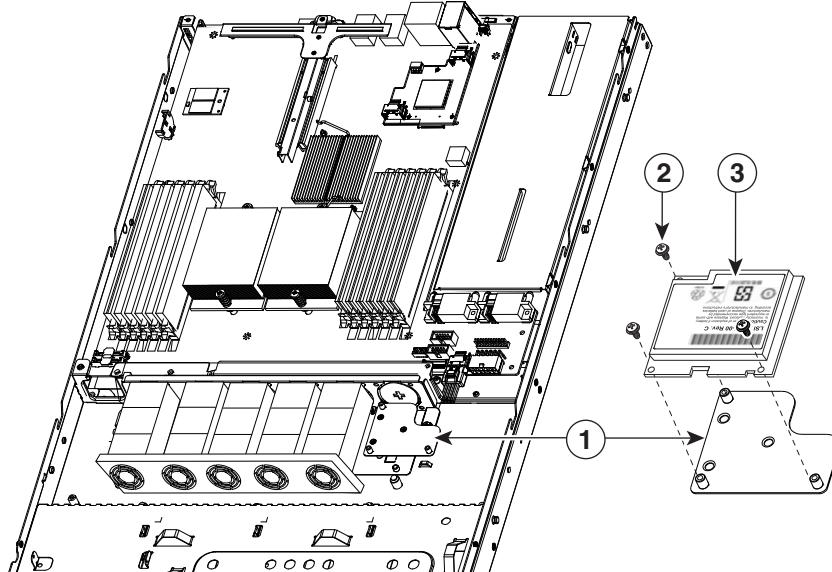
- Place the new BBU over the BBU bracket on the fan tray and align the three screw-holes in the BBU with the three standoffs on the bracket.
- Replace the three securing screws that hold the BBU to the BBU bracket.
- Replace the cable connector to socket J2 on the underside of the BBU.

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**Note** Be careful to align the arrow-mark on the cable connector with the arrow-mark on the socket to avoid damaging the connector pins.

**Figure 3-18** *Removing and Replacing an LSI BBU*



<b>1</b>	BBU bracket on fan tray	<b>2</b>	Securing screws (three)
<b>3</b>	BBU (connector J2 is on the underside)		

If this is a first-time installation of the BBU rather than a replacement, continue with these steps:

**Step 3** Install the cable adapter to the LSI card:

- a. Remove the LSI MegaRAID card from the PCIe riser. See the “Replacing a PCIe Card (Network Adapters)” section on page 3-25 for instructions.
- b. Install the plastic standoff to the corner of the LSI card near socket J10. The standoff sits on top of the card and the securing screw enters the standoff from the underside of the card.
- c. Align the adapter card over the LSI controller card. The notch in the side of the adapter should align with the standoff post.
- d. Press down firmly to engage the J2 connector on the underside of the adapter with the J10 socket on the LSI controller card.
- e. Swivel the standoff so that the threaded hole at the end of the swing-arm aligns with the screw-hole in the corner of the adapter.
- f. Install the securing screw through the adapter and into the plastic standoff.
- g. Connect the cable from the BBU to the socket on the adapter.



**Note** Be careful to align the arrow-mark on the cable connector with the arrow-mark on the socket to avoid damaging the connector pins.

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- h. Replace the LSI MegaRAID card to the PCIe riser. See the “Replacing a PCIe Card (Network Adapters)” section on page 3-25 for instructions.

## Identifying Which Cards Are Installed in Your Server

If you do not know which model of mass storage controller card is installed in your server, you can see the model names displayed on your console screen during bootup. However, you can only see this information if Quiet Boot is disabled in the server BIOS. Quiet Boot must also be disabled in order to see prompts for LSI option ROM-based utilities.

To disable Quiet Boot so that the device names and prompts for the option ROM-based LSI utilities display during bootup, follow these steps:

- 
- Step 1** Boot the server and watch for the F2 prompt during bootup.
  - Step 2** Press **F2** when prompted to enter the BIOS Setup utility.
  - Step 3** On the Main page of the BIOS Setup utility, set Quiet Boot to Disabled. This allows non-default prompts and POST messages to display during bootup instead of the Cisco logo screen.
  - Step 4** Press F10 to save your changes and exit the utility.
- 

## LSI MegaRAID Card Beep Codes

Table 3-3 contains a summary of the LSI MegaRAID card beep codes. These beep codes indicate activity and changes from the optimal state of your RAID array. For full documentation on the LSI MegaRAID cards and the LSI utilities, refer to the LSI documentation for your card.

**Table 3-3 Summary of LSI MegaRAID Card Beep Codes**

Beep Code	LSI Firmware State	Cause (Depending on RAID Level)
3 seconds on, 1 second off	SPEAKER_OFFLINE_ENTRY	<ul style="list-style-type: none"> <li>• RAID 0: One or more drives offline.</li> <li>• RAID 1: Two drives offline.</li> <li>• RAID 5: Two or more drives offline.</li> <li>• RAID 6: More than two drives offline.</li> </ul>
1 second on, 1 second off	SPEAKER_DEGRADED_ENTRY	<ul style="list-style-type: none"> <li>• RAID 1: A mirrored drive failed.</li> <li>• RAID 5: One drive failed.</li> <li>• RAID 6: One or two drives failed.</li> </ul>
1 second on, 3 seconds off	SPEAKER_HOTSPARE_ENTRY	A hot spare drive has completed the rebuild process and has been brought into the array.

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## Installing a Mezzanine Card

The qualified and supported part numbers for this component are subject to change over time. For the most up-to-date list of replaceable components, see the following URL and navigate to the page for your server model and generation:

[http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series\\_part\\_numbers.html](http://www.cisco.com/en/US/prod/ps10265/ps10493/c-series_part_numbers.html)

To install or replace a mezzanine card, follow these steps:

---

**Step 1** Remove a mezzanine card:

- a. Power off the server as described in the “[Shutting Down and Powering Off the Server](#)” section on [page 3-6](#).
- b. Disconnect all power cords from the power supplies.
- c. Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



**Caution** If you cannot safely view and access the component, remove the server from the rack.

---

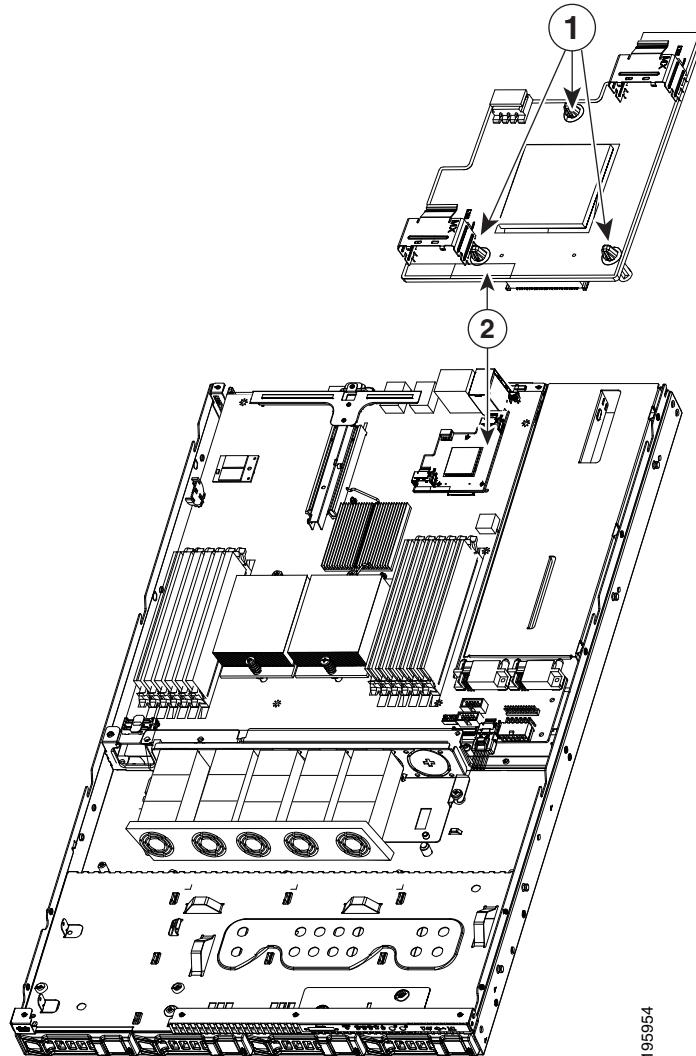
- d. Remove the top cover as described in the “[Removing and Replacing the Server Top Cover](#)” section on [page 3-8](#).
- e. Disconnect the cable harness from the connector on the top of the mezzanine card.
- f. Use needle-nose pliers to pinch the three plastic standoff posts that hold the mezzanine card to the motherboard. Pinching the top of the post provides clearance to lift the mezzanine card off the posts (see [Figure 3-19](#)).
- g. Lift up on both ends of the mezzanine card evenly to disengage its connector from the motherboard socket.

**Step 2** Install a mezzanine card:

- a. Place the mezzanine card in the chassis, aligning the holes on the card with the three plastic standoff posts on the motherboard.
- b. Push down firmly on the card to fully engage the connector of the card with the motherboard socket.
- c. Ensure that the holes in the card click down over the three plastic posts on the motherboard.
- d. Reconnect the cable harness to the connector on the top of the mezzanine card.
- e. Replace the top cover.
- f. Replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the **Power** button.

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**Figure 3-19 Removing and Replacing a Mezzanine Card**



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<b>1</b>	Mezzanine card retaining posts (three)	<b>2</b>	Mezzanine card
----------	--	----------	----------------

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## **Technical Specifications**

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This appendix lists the technical specifications for the Cisco UCS C200 server and includes the following sections:

- [Physical Specifications, page A-1](#)
- [Environmental Specifications, page A-2](#)
- [Power Specifications, page A-2](#)

## **Physical Specifications**

[Table A-1](#) lists the physical specifications for the server.

**Table A-1      *Physical Specifications***

<b>Description</b>	<b>Specification</b>
Height	1.70 in. (4.32 cm)
Width	16.92 in. (43.00 cm)
Depth	27.80 in. (70.60 cm)
Weight (loaded chassis)	33.00 lbs (14.97 kg)

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## Environmental Specifications

Table A-2 lists the environmental specifications for the server.

**Table A-2 Environmental Specifications**

Description	Specification
Temperature, operating: Derate 1°C for every 1000 ft (304 m) up to a maximum altitude of 10,000 ft (3048 m)	50 to 95°F (10 to 35°C)
Temperature, nonoperating within altitude: 0 to 40,000 feet (0 to 12,000 meters)	-40 to 149°F (-40 to 65°C)
Humidity (RH), noncondensing	5 to 93%
Altitude	0 to 10000 feet
Sound power level Measure A-weighted per ISO7779 LwAd (dBA) Operation at 73°F (23°C)	54.7 dBA
Sound power level Measure A-weighted per ISO7779 LwAd (Bels) Operation at 73°F (23°C)	5.7 Bels

## Power Specifications

Table A-3 lists the specifications for each power supply.

**Table A-3 Power Supply Specifications**

Description	Specification
AC-input voltage	115 to 230 VAC nominal (Range: 90 to 264 VAC)
AC-input frequency	50 to 60 Hz nominal (Range: 47 to 63 Hz)
Maximum AC-input current	10 Amps
Maximum output power for each power supply	650 W (up to two power supplies can be installed)
Power supply output voltage	Main power: 12 VDC Standby power: 5 VDC

You can get more specific power information for your exact server configuration by using the Cisco UCS Power Calculator:

[http://www.cisco.com/assets/cdc\\_content\\_elements/flash/dataCenter/cisco\\_ucs\\_power\\_calculator/](http://www.cisco.com/assets/cdc_content_elements/flash/dataCenter/cisco_ucs_power_calculator/)



## **Cable and Power Cord Specifications**

This appendix provides cabling and port specifications for control devices and power connections and includes the following sections:

- [KVM Cable, page B-1](#)
- [Supported Power Cords and Plugs, page B-2](#)

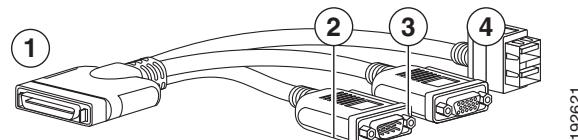
### **KVM Cable**

The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

This server supports the following Cisco components and part numbers.

<b>Supported Components</b>	<b>Part Number</b>
KVM cable	37-1016-01

**Figure B-1      KVM Cable**



<b>1</b>	Connector to server	<b>2</b>	DB9 serial connector
<b>3</b>	VGA connection for a monitor	<b>4</b>	Two-port USB connector for a mouse and keyboard

## ■ Supported Power Cords and Plugs

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## Supported Power Cords and Plugs

Each power supply has a separate power cord. Standard power cords or jumper power cords are available for connection to a power distribution unit that has IEC 60320 C19 outlet receptacles. The jumper power cords, for use in racks, are available as an optional alternative to the standard power cords. For more information, contact Cisco technical support.

The standard power cords have an IEC C19 connector on the end that plugs into the Power Distribution Unit (PDU), which is located in the bottom slot at the rear of the chassis. The optional jumper power cords have an IEC C19 connector on the end that plugs into the chassis' PDU and an IEC C20 connector on the end that plugs into an IEC C19 outlet receptacle.



**Note** Only the approved power cords or jumper power cords provided with the server are supported.

[Table B-1](#) lists the power cords for the server power supplies.

**Table B-1      Supported Power Cords for the Server**

<b>Description</b>	<b>Length</b>		<b>Power Cord Reference Illustration</b>
	<b>Feet</b>	<b>Meters</b>	
SFS-250V-10A-AR Power Cord, 250 VAC 10 A IRAM 2073 Plug Argentina	8.2	2.5	<a href="#">Figure B-2</a>
CAB-9K10A-AU 250 VAC 10 A 3112 Plug, Australia	8.2	2.5	<a href="#">Figure B-3</a>
SFS-250V-10A-CN Power Cord, 250 VAC 10 A GB 2009 Plug China	8.2	2.5	<a href="#">Figure B-4</a>
CAB-9K10A-EU Power Cord, 250 VAC 10 A M 2511 Plug Europe	8.2	2.5	<a href="#">Figure B-5</a>
SFS-250V-10A-ID Power Cord, 250 VAC 16A EL-208 Plug South Africa, United Arab Emirates, India	8.2	2.5	<a href="#">Figure B-6</a>
SFS-250V-10A-IS Power Cord, 250 VAC 10 A SI32 Plug Israel	8.2	2.5	<a href="#">Figure B-7</a>
CAB-9K10A-IT Power Cord, 250 VAC 10 A CEI 23-16 Plug Italy	8.2	2.5	<a href="#">Figure B-8</a>
CAB-9K10A-SW Power Cord, 250 VAC 10 A MP232 Plug Switzerland	8.2	2.5	<a href="#">Figure B-9</a>
CAB-9K10A-UK Power Cord, 250 VAC 10 A BS1363 Plug (13 A fuse) United Kingdom	8.2	2.5	<a href="#">Figure B-10</a>

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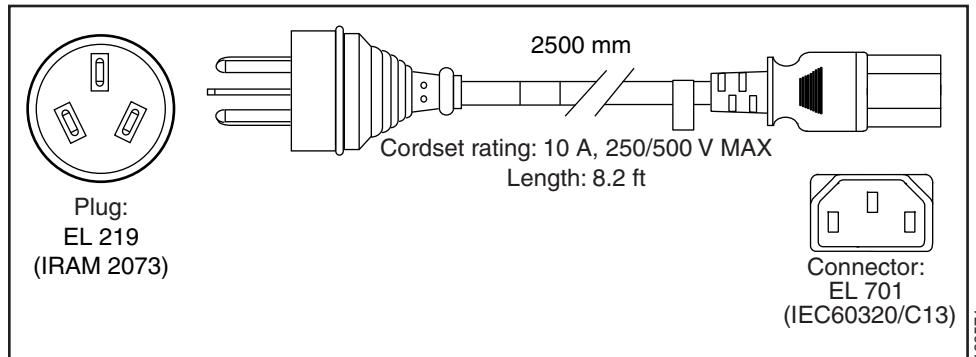
**Table B-1      Supported Power Cords for the Server (continued)**

<b>Description</b>	<b>Length</b>		<b>Power Cord Reference Illustration</b>
	<b>Feet</b>	<b>Meters</b>	
CAB-AC-250V/13A Power Cord, 250 VAC 13 A IEC60320 Plug North America	6.6	2.0	<a href="#">Figure B-11</a>
CAB-N5K6A-NA Power Cord, 250 VAC 13 A NEMA 6-15 Plug, North America	8.2	2.5	<a href="#">Figure B-12</a>
CAB-C13-C14-JMPR Cabinet Jumper Power Cord, 250 VAC 13 A, C13-C14 Connectors	2.2	0.7	<a href="#">Figure B-13</a>

## AC Power Cord Illustrations

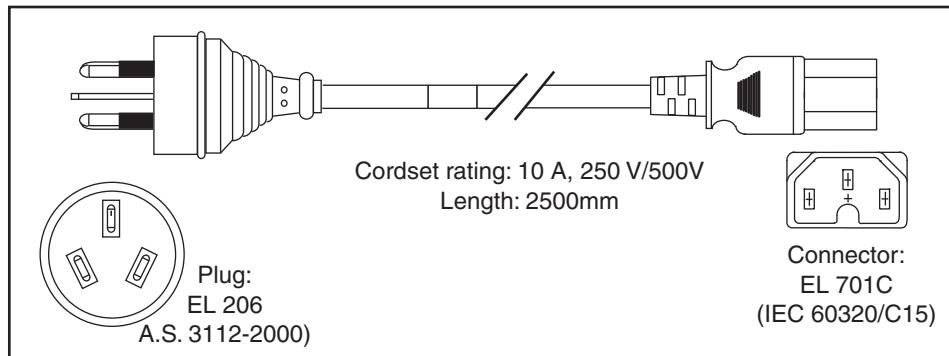
This section contains the AC power cord illustrations.

**Figure B-2      SFS-250V-10A-AR**



186571

**Figure B-3      CAB-9K10A-AU**

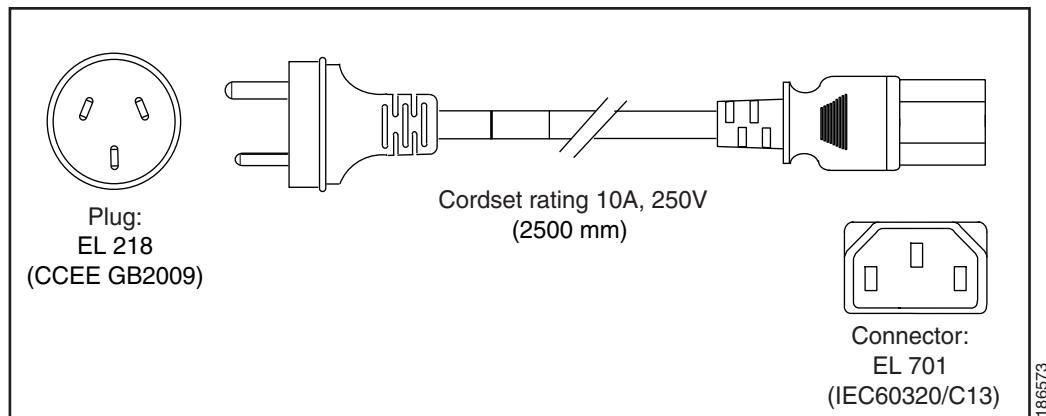


186581

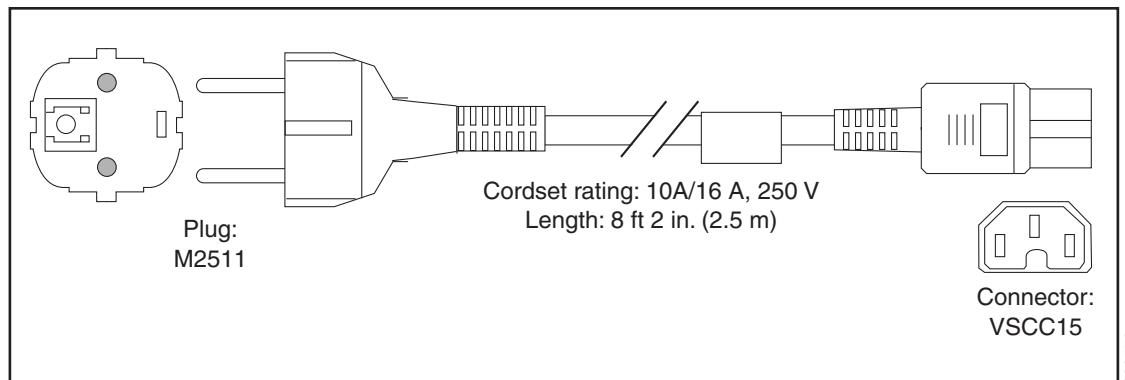
## ■ Supported Power Cords and Plugs

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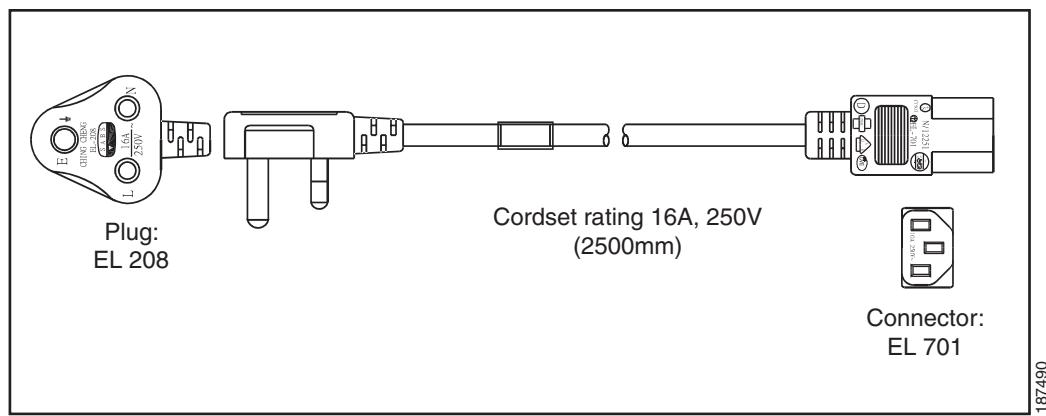
**Figure B-4 SFS-250V-10A-CN**



**Figure B-5 CAB-9K10A-EU**

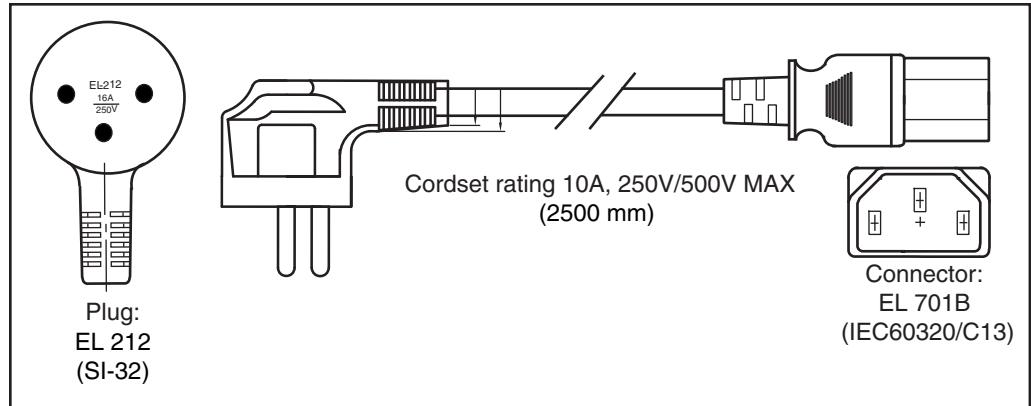


**Figure B-6 SFS-250V-10A-ID**

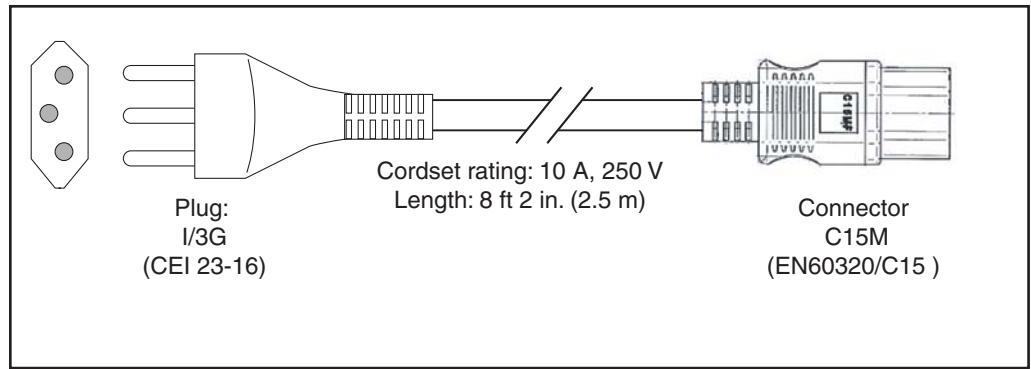


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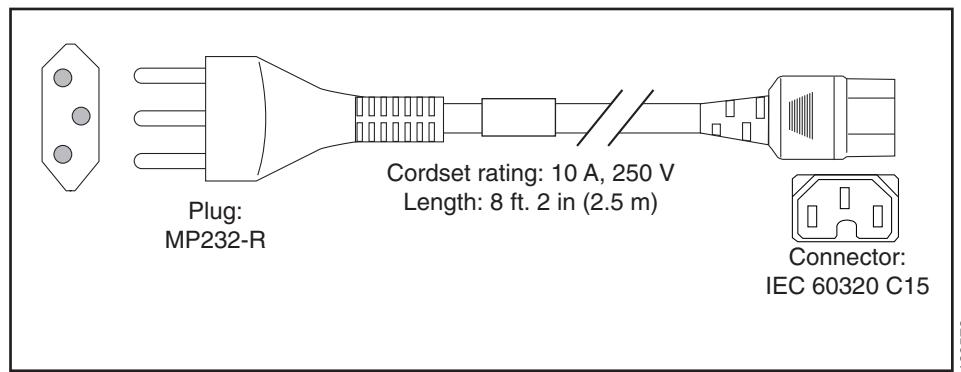
**Figure B-7 SFS-250V-10A-IS**



**Figure B-8 CAB-9K10A-IT**



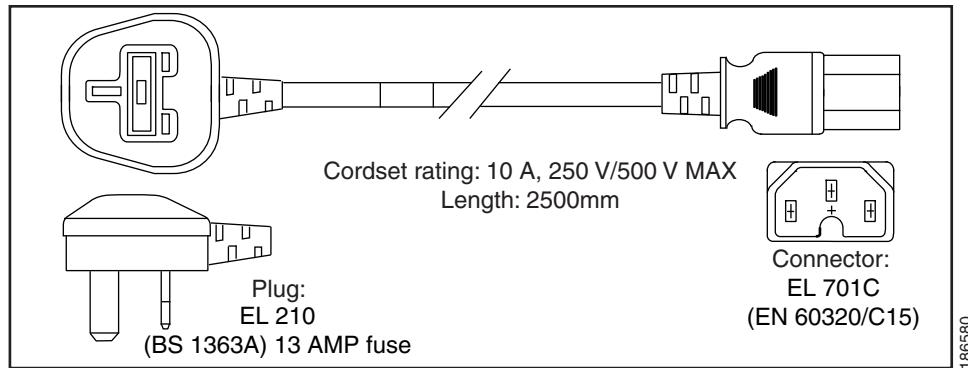
**Figure B-9 CAB-9K10A-SW**



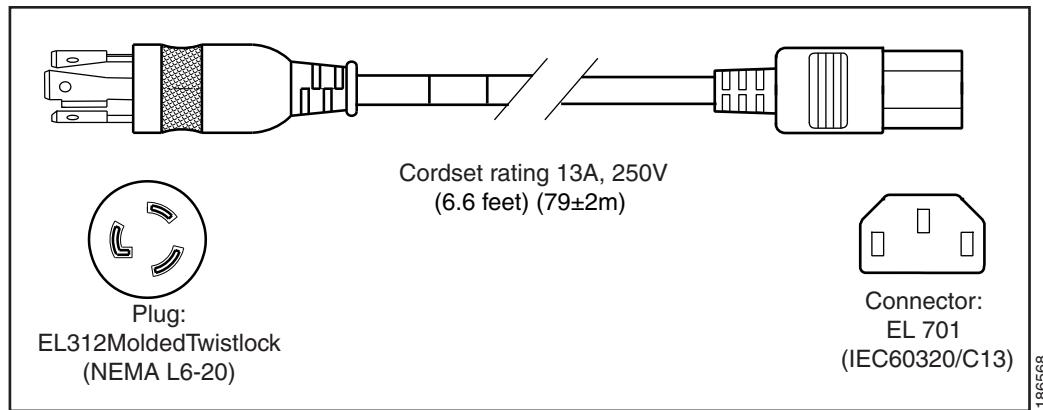
## ■ Supported Power Cords and Plugs

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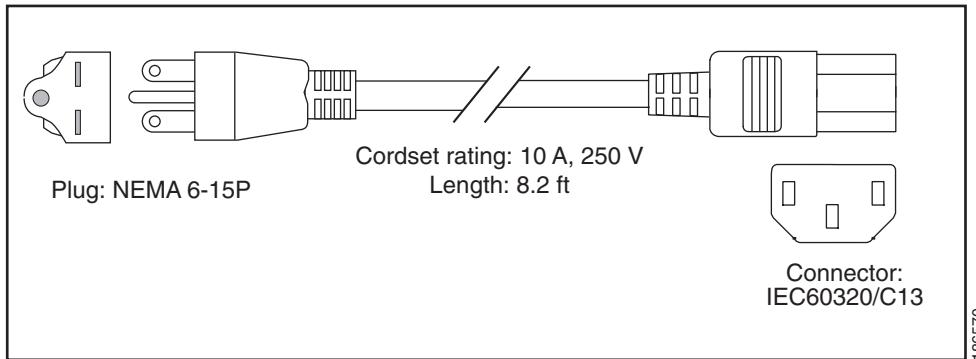
**Figure B-10 CAB-9K10A-UK**



**Figure B-11 CAB-AC-250V/13A**

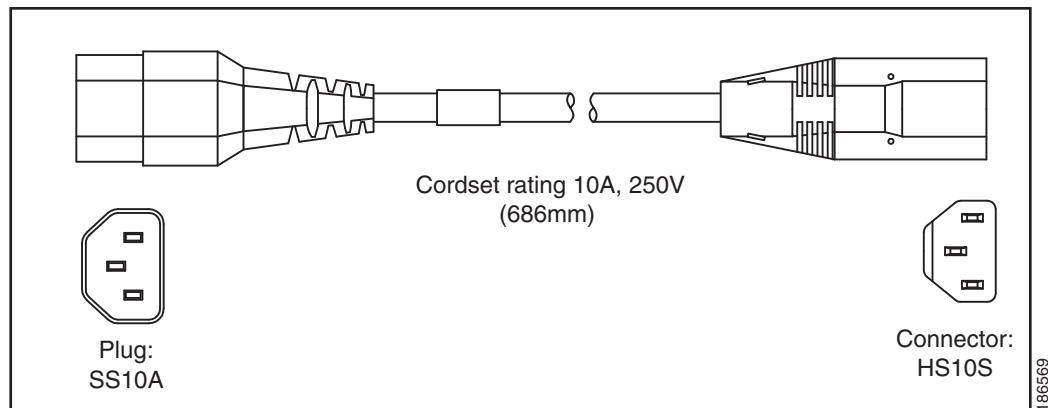


**Figure B-12 CAB-N5K6A-NA**



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**Figure B-13 CAB-C13-C14-JMPR, Jumper Power Cord**



## ■ Supported Power Cords and Plugs

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## **RAID Controller Considerations**

This appendix contains the following sections:

- [How to Determine Which Controller Is in Your Server, page C-1](#)
- [How to Disable Quiet Boot For CIMC Firmware Earlier Than Release 1.2\(1\), page C-2](#)
- [How To Enable the ICH10R Onboard Controller, page C-3](#)
- [How To Launch Option ROM-Based Controller Utilities, page C-4](#)
- [For More Information, page C-4](#)

### **How to Determine Which Controller Is in Your Server**

The C-Series servers can be ordered or configured with a number of RAID controller options:

- There is an Intel ICH10R onboard SATA controller on the motherboard. This controller supports RAID 0 and 1 for up to four SATA drives. This controller must be enabled in the system BIOS before you can use it (see the “[How To Enable the ICH10R Onboard Controller](#)” section on page [C-3](#)).



**Note** The ICH10R RAID controller is not compatible for use with VMWare ESX Server software.



**Note** The ICH10R RAID controller supports SATA drives only. SAS drives are not recognized.

- You can add an LSI SAS1064E-based controller mezzanine card. This card provides RAID 0, 1, and 1E support for up to four SAS or SATA drives.



**Note** The SAS1064E-based mezzanine card supports a configuration of all SAS drives or all SATA drives. You cannot mix SAS and SATA drives when using a 1064E-based controller card.

- You can add an LSI MegaRAID controller card (model varies by server). These cards provide RAID 0, 1, 5, 6, 00, 10, 50, and 60 support for up to eight SAS or SATA drives.

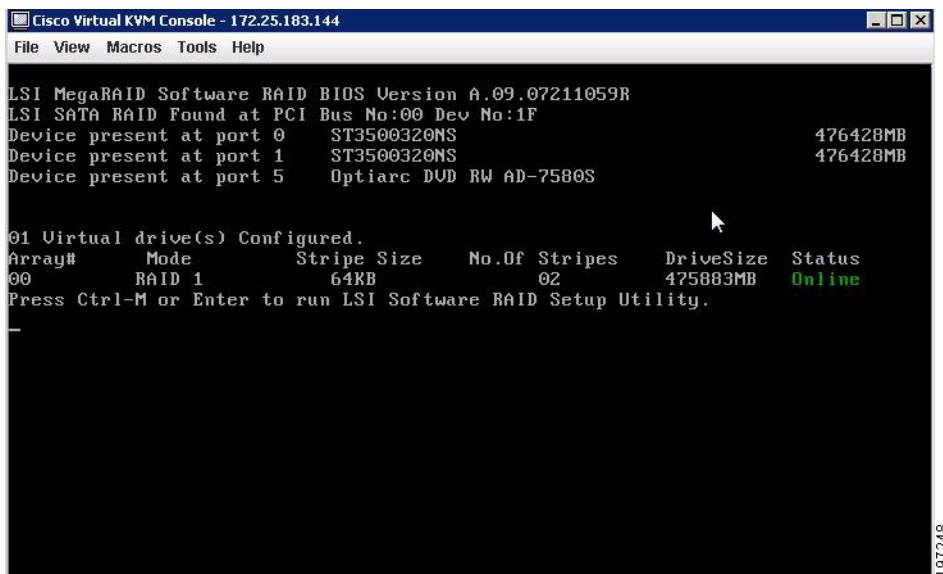


**Note** You can configure a mixture of SAS and SATA drives when using an LSI MegaRAID card. However, you cannot mix SAS and SATA drives within a volume. Two hot spares are supported so that you can configure a global hot spare for each type (SAS or SATA), and then configure your volumes to use their corresponding hot spare type (SAS or SATA).

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If you do not have a record of which device is used in the server, you can read the on-screen messages that are displayed during system bootup. These messages display information about the devices that are installed in your server.

- Information about the models of card installed are displayed as part of the verbose boot. You are also prompted to press **Ctrl-H** to launch configuration utilities for those cards. For servers running CIMC firmware earlier than release 1.2(1), see also [How to Disable Quiet Boot For CIMC Firmware Earlier Than Release 1.2\(1\), page C-2](#).
- If no models of card are displayed but there is a RAID configuration, your server is using the onboard ICH10R controller. You are also prompted to press **Ctrl-M** to launch the configuration utilities for this controller (see graphic below). See also [How To Enable the ICH10R Onboard Controller, page C-3](#).



The screenshot shows a terminal window titled "Cisco Virtual KVM Console - 172.25.183.144". The window has a menu bar with "File", "View", "Macros", "Tools", and "Help". The main content of the window is a text-based display of disk and RAID information. It shows the following details:

```

LSI MegaRAID Software RAID BIOS Version A.09.07211059R
LSI SATA RAID Found at PCI Bus No:00 Dev No:1F
Device present at port 0  ST3500320NS  476428MB
Device present at port 1  ST3500320NS  476428MB
Device present at port 5  Optiarc DUD RW AD-7580S

01 Virtual drive(s) Configured.
Array#  Mode  Stripe Size  No.Of Stripes  DriveSize  Status
00  RAID 1  64KB  02  475883MB  Online
Press Ctrl-M or Enter to run LSI Software RAID Setup Utility.

```

The status of the RAID array is listed as "Online". The window has a status bar at the bottom right showing "197248".

## How to Disable Quiet Boot For CIMC Firmware Earlier Than Release 1.2(1)

For CIMC firmware and BIOS release 1.2(1) and later, Quiet Boot has been removed. If you are running CIMC firmware and BIOS earlier than release 1.2(1), you can use the following procedure to disable Quiet Boot.

To disable quiet boot so that the controller information and the prompts for the option ROM-based LSI utilities are displayed during bootup, follow these steps:

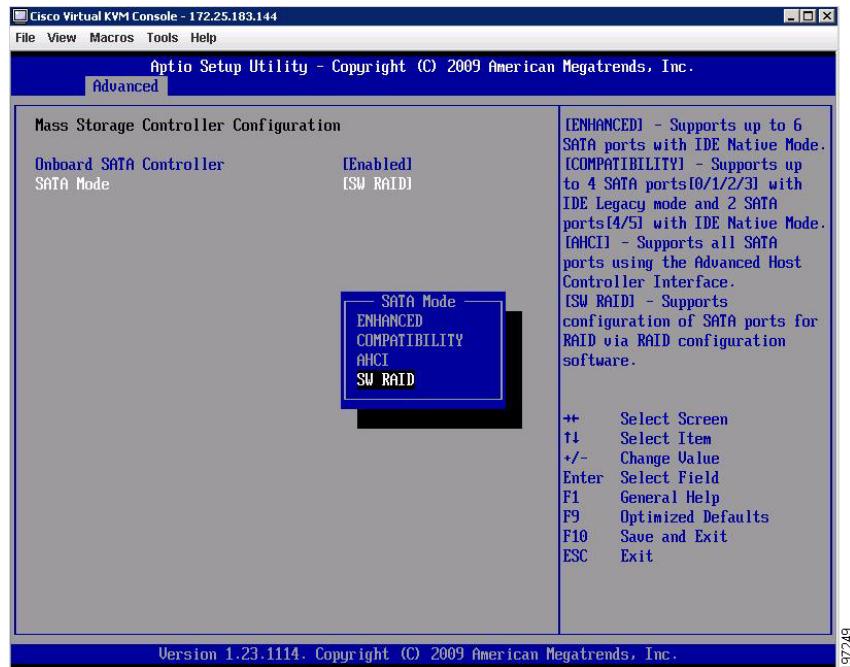
- 
- Step 1** Boot the server and watch for the F2 prompt during bootup.
  - Step 2** Press **F2** when prompted to enter the BIOS Setup utility.
  - Step 3** On the Main page of the BIOS Setup utility, set Quiet Boot to Disabled. This allows non-default messages, prompts, and POST messages to display during bootup instead of the Cisco logo screen.
  - Step 4** Press F10 to save your changes and exit the utility.
-

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## How To Enable the ICH10R Onboard Controller

To enable the ICH10R onboard controller, follow these steps:

- 
- Step 1** Boot the server and watch for the F2 prompt during bootup.
  - Step 2** Press **F2** when prompted to enter the BIOS Setup utility.
  - Step 3** Select the **Advanced** tab of the BIOS Setup utility.
  - Step 4** Select **Mass Storage Controllers Configuration**.
  - Step 5** Set Onboard SATA Controller to **Enabled**.
  - Step 6** Set SATA Mode to **SW RAID**.



- 
- Step 7** Press F10 to save your changes and exit the utility.

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## How To Launch Option ROM-Based Controller Utilities

To alter the RAID configurations on your hard drives, you can use your host-based utilities that you install on top of your host OS, or you can use the LSI option ROM-based utilities that are installed on the server.

When you boot the server and you have quiet boot disabled (see [How to Disable Quiet Boot For CIMC Firmware Earlier Than Release 1.2\(1\), page C-2](#)), information about your controller is displayed along with the prompts for the key combination to launch the option ROM-based utilities for your controller.

Watch for the prompt for your controller during verbose boot:

- The prompt for LSI controller card utility is **Ctrl-H**.
- The prompt for the onboard Intel ICH10R controller utility is **Ctrl-M**.

## For More Information

The LSI utilities have help documentation for more information about using the utilities.

For basic information on RAID and how to use the LSI utilities, see the documentation at LSI.com:

- LSI MegaRAID SAS Software User's Guide (for LSI MegaRAID)  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/3rd-party/lsi/mrsas/userguide/LSI\\_MR\\_SAS\\_SW\\_UG.pdf](http://www.cisco.com/en/US/docs/unified_computing/ucs/3rd-party/lsi/mrsas/userguide/LSI_MR_SAS_SW_UG.pdf)
- LSI SAS2 Integrated RAID Solution User Guide (for LSI SAS1064E)  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/3rd-party/lsi/irsas/userguide/LSI\\_IR\\_SAS\\_UG.pdf](http://www.cisco.com/en/US/docs/unified_computing/ucs/3rd-party/lsi/irsas/userguide/LSI_IR_SAS_UG.pdf)



## **Installation for Cisco UCS Integration**

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This appendix contains information and procedures for installing a Cisco UCS C200 server for integration with the Cisco Unified Computing System (UCS).

In this integration, the server is not managed by its standalone Cisco Integrated Management Controller (CIMC) GUI or CLI commands because it is instead managed through the Cisco UCS Manager software.

This appendix contains the following sections:

- [Installing a Release 1.2\(2\) or Later Server for Cisco UCS Integration, page D-1](#)
- [Upgrading a Server Earlier Than Release 1.2\(2\) for Cisco UCS Integration, page D-5](#)
- [Supported Network Adapter Card Combinations for UCSM Mode, page D-10](#)

## **Installing a Release 1.2(2) or Later Server for Cisco UCS Integration**

Servers that are Release 1.2(2) and later already have the prerequisite firmware and settings so that they are ready to be connected to the Cisco UCS environment immediately.

This procedure describes how to connect the Cisco UCS C-Series server to your preconfigured network. Preconfiguration of your network and networking equipment is beyond the scope of this document, but see the following URLs for documentation.

- For information about installing, configuring, and using the Cisco UCS 6100 Series fabric interconnects (switches) in the configuration, see the documentation at the following URL:  
[http://www.cisco.com/en/US/products/ps10276/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps10276/tsd_products_support_series_home.html)
- For information about installing, configuring, and using the Cisco Nexus 2248 fabric extenders in the configuration, see the documentation at the following URL:  
[http://www.cisco.com/en/US/products/ps10110/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps10110/tsd_products_support_series_home.html)

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## Required Items

The hardware configuration described in this procedure provides redundant network fabrics and paths for both management traffic and data traffic. The following items are required to create this configuration.

- A Cisco UCS C-Series server with a 10 Gb adapter card installed.



**Note** If you install a Cisco UCS P81E Virtual Interface Card (N2XX-ACPCI01), see [Special Considerations for the Cisco UCS P81E Virtual Interface Card \(N2XX-ACPCI01\), page 3-27](#).

- Two Cisco UCS 6100 Series fabric interconnects. The switch ports that carry server traffic must be enabled as server ports.
- Two Cisco Nexus 2248 fabric extenders.



**Note** You must plug a power cord into each of the two power supplies in the fabric extender. If a power supply is not connected to power, you might see “Major” faults reported during power-on self test (POST). For example, `Power supply 1 in fex 6 power: error`. You can clear these errors by connecting the missing power cord to the fabric extender power supply.

- Two RJ45 Ethernet cables.
- Four 10 Gb SFP cables.

## Procedure

Use the following procedure to connect the Cisco UCS C200 server to the Cisco UCS environment and power it on.

**Step 1** Install the server into your rack. See [Installing the Server Into a Rack, page 2-4](#).

**Step 2** Connect the management traffic paths (see [Figure D-1](#)):

- Connect an RJ45 Ethernet cable between 1Gb port Eth1 on the rear panel of the server and a port on a fabric extender in Fabric A. You can use any port on the fabric extender.
- Connect an RJ45 Ethernet cable between 1Gb port Eth2 on the rear panel of the server and a port on a fabric extender in Fabric B. You can use any port on the fabric extender.
- Connect a 10 Gb SFP cable between fabric extender A and a port on fabric interconnect A. You can use any port on fabric interconnect A, but the port must be enabled for server traffic.
- Connect a 10 Gb SFP cable between fabric extender B and a port on fabric interconnect B. You can use any port on fabric interconnect B, but the port must be enabled for server traffic.

**Step 3** Connect the data traffic paths (see [Figure D-1](#)):

- Connect a 10 Gb SFP cable between the 10 Gb adapter card in the server and a port on fabric interconnect A. You can use any port on fabric interconnect A, but the port must be enabled for server traffic.
- Connect a 10 Gb SFP cable between the 10 Gb adapter card in the server and a port on fabric interconnect B. You can use any port on fabric interconnect B, but the port must be enabled for server traffic.

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**Step 4** Attach a power cord to each power supply in your server, and then attach the power cord to a grounded AC power outlet. See the “[Power Specifications](#)” section on [page A-2](#) for power specifications.

Wait for approximately two minutes to let the server boot in standby power during the first bootup.

You can verify power status by looking at the Power Status LED on the front panel (see [Figure 1-1](#) on [page 1-1](#)):

- Off—The server is not receiving power. Check the power cord connections and the power source of the facility.
- Blinking green—The server is in standby power mode. Power is supplied only to the service processor and some motherboard functions.
- Solid green—The server is in main power mode. Power is supplied to all server components.

**Note**

During bootup, the server beeps once for each USB device that is attached to the server. Even if there are no external USB devices attached, there is a short beep for each virtual USB device such as a virtual floppy drive, CD/DVD drive, keyboard, or mouse. A beep is also emitted if a USB device is hot-plugged or hot-unplugged during BIOS power-on self test (POST), or while you are accessing the BIOS Setup utility or the EFI shell.

**Step 5** Use the supplied KVM cable to connect a keyboard and VGA monitor to the console connector on the front panel (see [Figure 1-1](#) on [page 1-1](#)).

**Note**

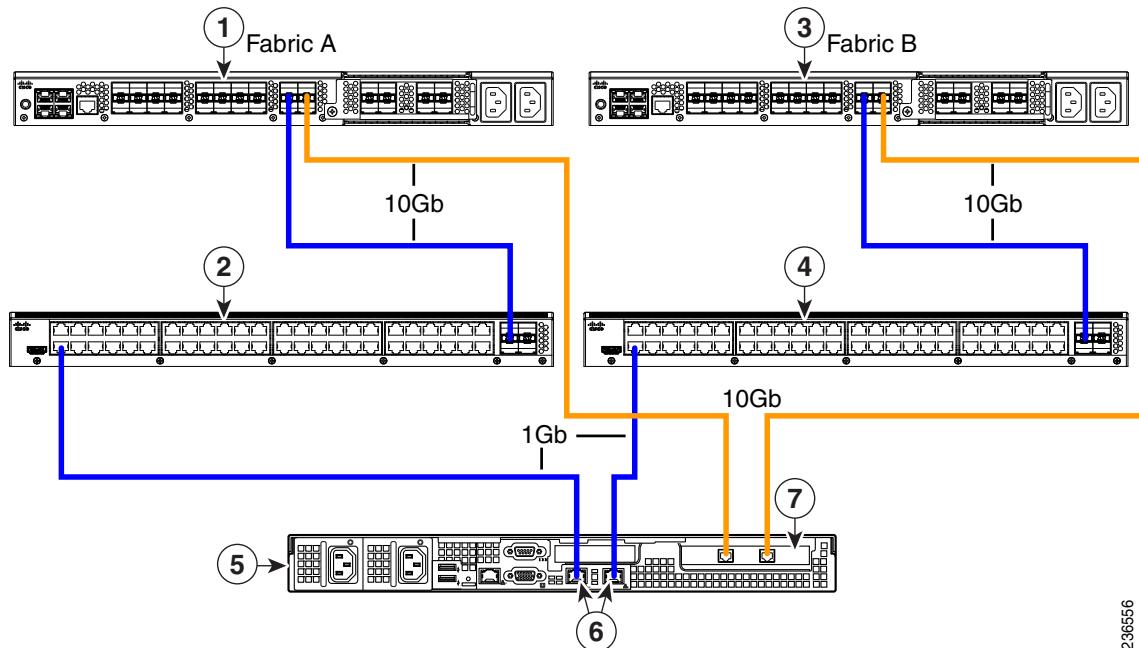
Alternatively, you can use the VGA and USB ports on the rear panel. However, you cannot use the front panel console connector VGA and the rear panel VGA at the same time. If you are connected to one VGA connector and you then connect a video device to the other connector, the first VGA connector is disabled. You can then reactivate the first VGA connector only by rebooting the server.

**Step 6** Reboot the server so that it is discovered by the Cisco UCS Manager software.

**Step 7** To view and configure settings for the server from within the Cisco UCS Manager software, see the information instructions in the [Cisco UCS Manager Configuration Guide for Release 1.4\(1\)](#) or later.

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**Figure D-1 Cabling Configuration for Cisco UCS Integration**



236556

<b>1</b>	Cisco UCS 6100 Series fabric interconnect (Fabric A)	<b>5</b>	Cisco UCS C200 server
<b>2</b>	Cisco Nexus 2248 fabric extender (Fabric A)	<b>6</b>	1 Gb Ethernet LOM ports
<b>3</b>	Cisco UCS 6100 Series fabric interconnect (Fabric B)	<b>7</b>	10 Gb adapter card
<b>4</b>	Cisco Nexus 2248 fabric extender (Fabric B)		



**Note** The paths shown in blue carry management traffic. The paths shown in gold carry data traffic.

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# Upgrading a Server Earlier Than Release 1.2(2) for Cisco UCS Integration

This section describes the process for upgrading a server that was shipped prior to the 1.2(2) release so that it can be used in the Cisco UCS environment.



**Note** The server must be a Generation M2 (or later) server.

This procedure describes how to connect the Cisco UCS C-Series server to your preconfigured network. Preconfiguration of your network and networking equipment is beyond the scope of this document, but see the following URLs for documentation.

- For information about installing, configuring, and using the Cisco UCS 6100 Series fabric interconnects (switches) in the configuration, see the documentation at the following URL: [http://www.cisco.com/en/US/products/ps10276/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps10276/tsd_products_support_series_home.html)
- For information about installing, configuring, and using the Cisco Nexus 2248 fabric extenders in the configuration, see the documentation at the following URL: [http://www.cisco.com/en/US/products/ps10110/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps10110/tsd_products_support_series_home.html)

## Required Items

The hardware configuration described in this procedure provides redundant network fabrics and paths for both management traffic and data traffic. The following items are required to create this configuration.

- A Cisco UCS C-Series M2 (or later) server with a Cisco 10 Gb adapter card installed.



**Note** The server CIMC and BIOS firmware must be at version 1.1(1d) or later before you can use the Cisco Host Upgrade Utility as described in this procedure.



**Note** If you install a Cisco UCS P81E Virtual Interface Card (N2XX-ACPCI01), see [Special Considerations for the Cisco UCS P81E Virtual Interface Card \(N2XX-ACPCI01\)](#), page 3-27.

- A physical VGA monitor and a USB keyboard. You can use a KVM dongle on the front-panel KVM connector or connect directly to the server ports.
- The Cisco UCS C-Series 1.2(2) or later software release container for your server. The software release is distributed on Cisco.com as a Zip file that contains the CIMC firmware, BIOS firmware, and the LOM firmware.
- The Cisco Host Upgrade Utility ISO file that you can download from Cisco.com.
- (Optional for local upgrades) A writable DVD with at least 23 MB of space.
- Two Cisco UCS 6100 Series fabric interconnects.
- Two Cisco Nexus 2248 fabric extenders.



**Note** You must plug a power cord into each of the two power supplies in the fabric extender. If a power supply is not connected to power, you might see “Major” faults reported during power-on self test (POST). For example, Power supply 1 in flex 6 power: error. You can clear these errors by connecting the missing power cord to the fabric extender power supply.

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- Two RJ45 Ethernet cables.
- Four 10 Gb SFP cables.

## Upgrade and Connection Procedures

Use the procedures in this section in the following order to upgrade your server and connect it to the Cisco UCS environment:



**Note**

These procedures assume that you have already installed the server in your rack and connected it to power. See [Installing the Server Into a Rack, page 2-4](#) and [Connecting and Powering On the Server \(Standalone Mode\), page 2-8](#).

- 1. [Upgrading the Firmware and Rebooting in UCSM Mode, page D-6](#)
- 2. [Physically Connecting the Server to the Cisco UCS Environment, page D-8](#)

### 1. Upgrading the Firmware and Rebooting in UCSM Mode

- Step 1** Find the C-Series 1.2(2) or later software release container for your server online and download it to a temporary location on your workstation. The software release is distributed as an ISO file that contains the CIMC firmware, BIOS firmware, and LOM firmware:
- See the following URL: <http://www.cisco.com/cisco/software/navigator.html>
  - Click **Unified Computing** in the middle column.
  - Click **Cisco UCS C-Series Rack-Mount Servers** in the right-hand column.
  - Click the name of your model of server in the right-hand column.
  - Click **Software on Chassis** in the right-hand column.
  - Click **Unified Computing System (UCS) Software Container for Rack Mount Servers**.
  - Click the release number that you are downloading.
  - Click **Download Now** to download the `<model>-<version>.zip` file.
  - Continue through the subsequent screens to accept the license agreements and browse to a location where you save the software container zip file.
- Step 2** Extract the contents of the software container zip file that you just downloaded.
- Step 3** Find the Host Upgrade Utility ISO file download for your server online and download it to a temporary location on your workstation:
- See the following URL: <http://www.cisco.com/cisco/software/navigator.html>
  - Click **Unified Computing** in the middle column.
  - Click **Cisco UCS C-Series Rack-Mount Servers** in the right-hand column.
  - Click the name of your model of server in the right-hand column.
  - Click **Software on Chassis** in the right-hand column.
  - Click **Unified Computing System (UCS) Server Standalone Host Utilities**.
  - Click the release number that you are downloading.
  - Click **Download Now** to download the `standalone-host-utilities.1.2.2d.zip` file.

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- i. Continue through the subsequent screens to accept the license agreements and browse to a location where you save the utilities zip file.

**Step 4** Extract the contents of the `standalone-host-utilities.1.2.2d.zip` file. Note the location to which the `hostUpgrade_<version>.iso` file is saved.

**Step 5** Prepare the ISO on either local media for local upgrade, or as a virtual device for remote upgrade:

- For local upgrade—Perform these steps before you go to [Step 6](#):
  - a. Burn the ISO image onto a writable DVD.
  - b. Connect a VGA monitor and USB keyboard to the Cisco C-Series server.
  - c. Insert the DVD into the DVD drive of the Cisco C-Series server.
- For remote upgrade—Perform these steps before you go to [Step 6](#):
  - a. Use a browser to connect to the CIMC Manager software on the server that you are upgrading. Enter the CIMC IP address for that server in the address field of the browser, then enter your user name and password.
  - b. Launch a KVM Console window (click the KVM keyboard icon).
  - c. When the Virtual KVM Console window launches, select **Tools > Launch Virtual Media**.
  - d. In the Virtual Media Session window, click **Add Image** and then use the dialog to navigate to the utility ISO file and select it. Navigate to the location where you downloaded the ISO. The ISO image is displayed in the Client View pane.
  - e. In the Virtual Media Session window, check the check box in the Mapped column for the ISO file that you added, and then wait for mapping to complete. Observe the progress in the Details pane.

Now the ISO file is mapped as a remote device.

**Step 6** Boot the server and press **F6** when prompted to open the Boot Menu screen.

**Step 7** On the Boot Menu screen, select the device where you prepared the ISO in [Step 5](#):

- If you are upgrading locally, select the physical CD/DVD device and then press **Enter** (for example, `SATA5 : TSSTcorp CDDVDW TS-L633C`).
- If you are upgrading remotely, select **Cisco Virtual CD/DVD** and then press **Enter**.

The server is rebooted from the device that you chose.

**Step 8** A screen appears with the server BIOS and CIMC firmware versions. Answer the prompt, “Have you read the Cisco EULA” (end user license agreement)?

- Press **y** to accept the EULA and continue the update.
- Press **n** to read the EULA. The EULA is displayed and you are prompted to press **y** to continue the update, or **n** to cancel. If you press **n**, the server will reboot without updating.
- Press **q** to exit without updating. This selection reboots the server.

The Host Upgrade Menu screen is displayed.

**Step 9** Upgrade the CIMC, BIOS, and LOM firmware by entering **4** (All the above) at the `Enter Choice` prompt: The utility selects the correct firmware components for your server and then upgrades the CIMC, BIOS, and LOM firmware, in that order. Watch your console screen until you see confirmation that the upgrades were successful, then go to [Step 10](#).

**Step 10** After the upgrades are successful, reboot the server with UCSM mode settings from the Host Upgrade Menu by entering **6** (Reboot with configuring the CIMC to default factory settings (UCSM mode)) at the `Enter Choice` prompt.

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**Note** The new CIMC firmware is activated automatically during this reboot.

The utility reboots the server with UCSM mode settings. This mode allows integration with the Cisco UCS environment.



**Note** These UCSM mode settings enable DHCP, Active-Active NIC redundancy, and Shared LOM NIC mode, which enables CIMC control through the 1Gb LOM ports, rather than the management port. Any static IP addresses and the management port are disabled, so you lose connection with the CIMC. To connect the server to your Cisco UCS fabric interconnects, continue with [2. Physically Connecting the Server to the Cisco UCS Environment, page D-8](#).

## 2. Physically Connecting the Server to the Cisco UCS Environment

Use the following procedure to connect the Cisco UCS C200 server to the Cisco UCS environment.

**Step 1** Connect the management traffic paths (see [Figure D-2](#)):

- a. Connect an RJ45 Ethernet cable between 1Gb port Eth1 on the rear panel of the server and a port on a fabric extender in Fabric A.
- b. Connect an RJ45 Ethernet cable between 1Gb port Eth2 on the rear panel of the server and a port on a fabric extender in Fabric B.
- c. Connect a 10 Gb SFP cable between fabric extender A and a port on fabric interconnect A. The port that you use on fabric interconnect A must be enabled for server traffic.
- d. Connect a 10 Gb SFP cable between fabric extender B and a port on fabric interconnect B. The port that you use on fabric interconnect B must be enabled for server traffic.

**Step 2** Connect the data traffic paths (see [Figure D-2](#)):

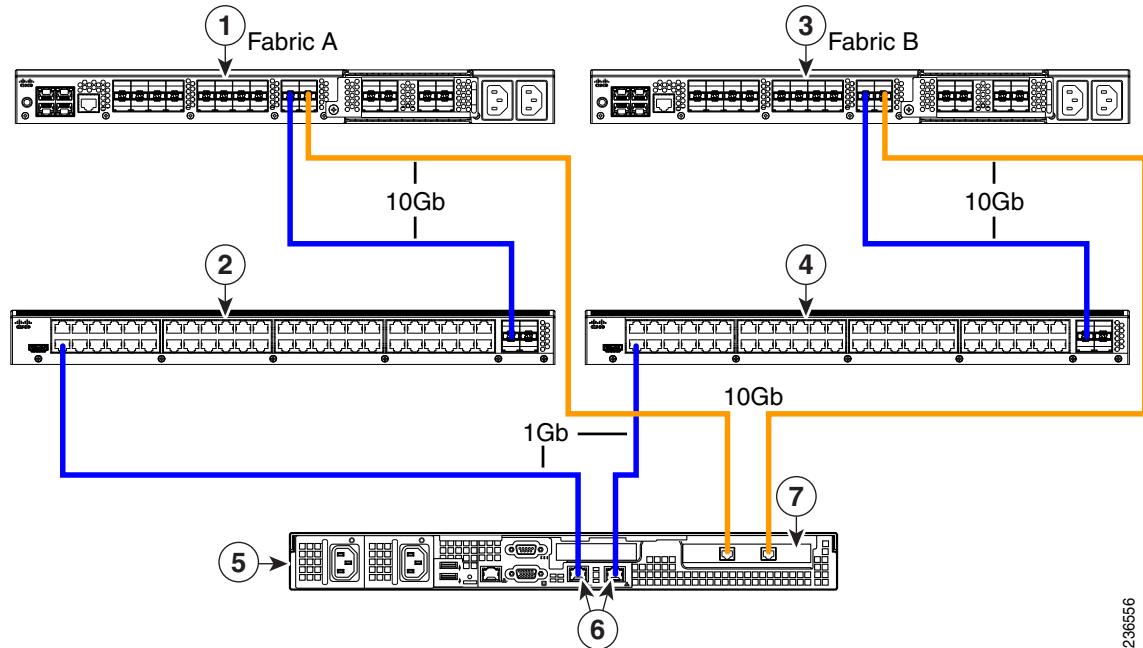
- a. Connect a 10 Gb SFP cable between the 10 Gb adapter card in the server and a port on fabric interconnect A. The port that you use on fabric interconnect A must be enabled for server traffic.
- b. Connect a 10 Gb SFP cable between the 10 Gb adapter card in the server and a port on fabric interconnect B. The port that you use on fabric interconnect B must be enabled for server traffic.

**Step 3** Reboot the server so that it is discovered by the Cisco UCS Manager software.

**Step 4** To view and configure settings for the server from within the Cisco UCS Manager software, see the information instructions in the [Cisco UCS Manager Configuration Guide for Release 1.4\(1\)](#) or later.

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**Figure D-2 Cabling Configuration for Cisco UCS Integration**



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<b>1</b>	Cisco UCS 6100 Series fabric interconnect (Fabric A)	<b>5</b>	Cisco UCS C200 server
<b>2</b>	Cisco Nexus 2248 fabric extender (Fabric A)	<b>6</b>	1 Gb Ethernet LOM ports
<b>3</b>	Cisco UCS 6100 Series fabric interconnect (Fabric B)	<b>7</b>	10 Gb adapter card
<b>4</b>	Cisco Nexus 2248 fabric extender (Fabric B)		



**Note** The paths shown in blue carry management traffic. The paths shown in gold carry data traffic.

**■ Supported Network Adapter Card Combinations for UCSM Mode**

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## Supported Network Adapter Card Combinations for UCSM Mode

Network Adapter cards can be Cisco Virtual Interface Cards (VICs), Converged Network Adapters (CNAs), or Ethernet adapters. Only network adapter cards that are officially supported in the [Hardware and Software Interoperability Matrix for C-Series Servers](#) are supported.

When the server is used in UCSM mode, only certain combinations of adapters have been qualified for official support:

- Only CiscoVirtual Interface Cards (VICs) installed in the server. No mixing with CNAs or Ethernet cards.
- Only one type of CNA (Q or E) installed in the server. No mixing with VICs or Ethernet adapters.
- Only one type of Ethernet adapter (B or I) installed in the server. No mixing with VICs or CNAs.



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